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وزارة التربية والتعليم

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Introduction

Dear student

The twenty-first century is characterized by the stunning and successive evolution in the field of Information and Communication Technology and, the variation of electronic knowledge repositories e.g. libraries, electronic journals, e-books and, virtual museums ….. etc., also its diversity in all fields of life, easiness of publishing and , simplicity of exchanging electronic information.

Our aim is pointed towards the implementation of the (*Electronic Arabic Atlas*) project to help and encourage you practicing different thinking skills e.g. scientific, innovative, critic skills and, problem solving. And provide a diverse learning environment; self-learning and cooperative learning during the implementation of project's activities.

We were keen during the preparation of this book to focus on the implementation of an ***Electronic Arabic Atlas***, ranging from Identifying project's objectives, organizing its topics and, delivering skills and information consistent with the implementation of each phase of the project, so that each topic covers one of the skills required for accomplishing the project.

We start by the project's plan, and problem-solving approach that define project's requirements, then comes the data collection and, manipulation, designing multimedia effects and project User Interface and, ending with writing program code that will be linked to databases and multimedia.

Hence, the need comes up for an electronic textbook, the traditional printed book turns out to be a digital or electronic book; which will keep you up with the growth in information and communication technology, and will develop and strengthen your skills in manipulating the current age requirements and the requirements of the labor market.

We always work hard for the good of our country, Egypt.

With our best regards (project's team)

General objectives

1- Using problem solving technique to create an '(Electronic Arabic Atlas)'.
2- Manipulating data through the operating system and the Internet.
3- Creating a database using one of the Spreadsheets Applications.
4- Creating and employing multimedia files.
5- Establishing Project's interface and adjusting its properties.
6- Using Visual Basic. Net language to display Project's data.
7- Writing Project's codes and, other codes to play and stop multimedia files.



Content

"(Electronic Arabic Atlas)" **Project.**

Topic one

An introduction to the project

Learning Outcomes:

At the end of the Topic student can:

(1) **Define multimedia, its types, and its advantages.**

(2) **Identify problem solving stages**

(3) **Define Project's Problem**

(4) **Collaborate with his colleagues to define project's requirements**

(5) **Download one of the (Electronic Arabic Atlas) programs available on the Internet.**



Atlas: a way to explore the world through a book featuring geographic maps, and related to a specific topic like continents and countries. Examples of such Atlas: World Atlas, Atlas of Africa, Arabic Atlas. The evolution of the information technology is accompanied by the development of Atlas; the traditional printed Atlas turns out to be a digital or electronic one available online through the Internet or saved on compact discs.



The Arabic encyclopedia



The word Atlas

Examples of (Electronic Arabic Atlas) Program

- There are many programs that enable you to view the world maps, and get information about countries and continents.
- These programs contain also comparisons among countries concerning area, population number, temperature, air pressure, wind, ..etc.





Dear student, be sure to ask for to the Geography teacher's help to ensure the validity and correctness of data (texts, maps, sounds and videos) in all programs downloaded from the internet.

Search through the Internet

With the help of your teacher, you can download one of the Atlas programs from the internet.

After you download the Atlas from the internet (bearing in mind to refer to your "Geography teacher", to ensure the correctness of data, students should be provided with correct information).

Discover the geographical location of your country and its geographical potential i.e. the name of the continent, the name of the country, the capital, main ports, the flag, water resources, national anthem, and touristic attractions ….etc.

Exercise (1)

Define the stages of problem solving

What you need when you create the suggested project (Electronic Arabic Atlas), With the help of your teacher, work with your classmates to make a plan of how you can determine the necessary steps for the suggested project.



At the end of the discussion, the approved program will be executed through students' workgroup. **At the end of the exercise, you deduce the following:**

Text-based data.

Text data includes: Continents names, countries names in each continent. Data about each country (its capital, main ports, its flag, its location on the map, water resources, national anthem, touristic attractions)

Graphical data: (images and, animated pictures).

Graphical data includes**:** Continents - countries - capitals - the flags of Arab countries – touristic attractions

Sound data:

Sound data; such as the national anthem of the country and audio narration accompanying some sections in the project.

From the previous discussion we realize that the main factors to accomplish a project are as follows:

1. Following Problem solving techniques.
2. Working through collaborative teams.
3. Managing time and organizing tasks.
4. Identifying the objectives or required Outputs.
5. Identifying the Requirements.

From the above, we can specify the requirements for creating an (Electronic Arabic Atlas):

1- Data in various formats.
2- Programs and devices required to produce data in multimedia format.
3- Programming languages to be used.

Additional information

***Multimedia*:**

The term (multimedia) is composed of two parts: the first part is (Multi) and means multiplicity, and the second part is (Media) and it means media carrying different information such as(audio, image and video) including optical discs (CDROM), which aims to achieve efficiency in the process of teaching and learning..

Advantages of Multimedia in Education

Multimedia has many advantages like:

1-Saving the time and effort for both teacher and learner.

2-Making learning process enjoyable and interesting.

3-Grabbing attention of information presented, which facilitate understanding.

4-Providing a diversity of methods to display information which stimulate audio-visual senses.

Multimedia Elements

1. Data or Information

It can be:

-Text
- Image or Picture
- Sound
- Video Clip

You can get this data and information through the Internet or other devices used for this, and you can also display and handle this data.

2. Hardware

Hardware is the necessary devices used to handle data and information of different types, from these devices the Scanner, Digital recorders and, Digital Camera.

3. Software

Software is the set of programs and applications used to handle data and information such as:

Movie Maker Program - Sound Recorder program - Windows Media Player program.

You may face some problems during the execution of project's stages. Apply problem-solving techniques you have already studied.

You can also apply problem-solving techniques for planning the various stages of project's implementation; as illustrated in the following:

1- Problem Definition

Define the problem, required output and available inputs as an overview

2-Determine the outputs

The outputs are the important information and results obtained after solving the problem.

3- Determine the inputs

The inputs are data available that can be obtained from several resources, such as books, encyclopedias and the Internet, etc., and these data will be processed to obtain the required output.

4- Develop an Algorithm

We set a logical sequence of steps, these steps are called (Algorithm). To illustrate this sequence of steps; many tools can be used the (Flowchart) is one of them .

5-Coding a computer program

We have already planned for solving the problem, when using computer we have to translate the steps of solving problem; into an application using one of the programming language.

6- Program Testing and debugging

The aim of this phase is the implementation of the code that has been written, then testing this code using diverse values (input), displaying the results (output), and then making the necessary corrections in case of errors.

7-Program or Project Documentation

You can document the program or project by doing the following:

- Write the goal of the project ("programming project"), name of the programmer, creation date and the software version number.
- Save program or project in the appropriate storage media.
- Print program or project and keep the printed papers within a folder in a safe place.
- Add Help or a guide for using program or project.
- You can make an executable (EXE) version of the program or project; so that it runs directly through the operating system.

Analysis of Project interface

Dear student, follow the stages of solving problems when creating the proposed project; as follows:

First :Identify the problem

The problem is: To create an '(Electronic Arabic Atlas)' program.

Second: Identify project output.

The output is: Plan a design for the proposed project interface.

Third: Determine project inputs.

Intended project's requirements of data and information with different types (text, graphical, audio and, video).

Exercise (2)

Proposed Project Interface



- *Study the interface of the program for the proposed project.*
- *Collaborate with your colleagues in the group you belong to; in the analysis of project's interface and deduce the data required as prerequisites for project's implementation.*
- *Record the results you find with your group in a report; to be presented and discussed with your teacher and colleagues.*

Exercise (3)

Study the interface of the program for the proposed project as shown in the figure:



Choose the correct answer of the following:

The data required for the project are of the type.......................

A) texts

B) pictures

C) sounds or music or video clips.

D) all the above.

Questions

Question one

Tick (✓) in front of the right sentence and sign (✗) in front of the wrong one:

1-You can get the data required to solve any problem through the stage of identifying inputs.	( )
2-The stage "test and debug the program errors" in the problem-solving stages is to write a program (Coding) using one of the computer languages.	( )
3- After setting a plan for solving a problem; you can define the problem	( )
4-The program documentation is the final stage in the problem-solving stages.	( )
5-Data related to a specific project are collected after creating this project.	( )

Question two

Choose the correct answer of the following:

(1) The stage…………… is considered the first stage of the problem-solving **stages**

(A) Identify the problem (B) the program documentation.

(C) Coding the program (D) test and debug the program errors

(2) The stage which precedes writing program code is ....

(A) Identify the inputs. (B) determine the outputs.

(C) Problem definition. (D) develop an (Algorithm).

(3) Transferring (problem solving steps) into an application using one of the programing languages is called ………….Stage.

(A) Determine the output (B) Coding the program using a computer

(C) documentation of the program or project (D) Develop an Algorithm

The third question:

Briefly mention what is meant by the following:

1. " Define the problem "...
2. " Determine the outputs "..
3. " Coding a computer program"..
4. " Develop an Algorithm"..

Topic two

Managing Project's data



Learning Outcomes:

At the end of this Topic, students will be able to:

(1) Recognize what is data management.

(2) Recognize what are search engines.

(3) Create folders.

(4) Save files inside folders.

(5) Collect data from (the Internet and other multimedia).

(6) Add keywords for searching using search engines.

Operating System

The increasing development of information and communication technology and its relation to business management and projects led to the appearance of the concept of *Data Management*.

Data management

Is the process of organizing and directly controlling data generated during a searching process, then collecting and, entering this data that will processed then saved ,and producing its output.

From your previous study, you learned that the operating system can manage files and folders stored in storage units. The most important operations carried out by the operating system for managing files and folders are as follows:

Create (Folder -File)

Right-Clicking with the mouse in free place on the Desktop, opens a shortcut menu; from which you choose the command *New* then *Folder* and then type the name of the folder; so a new folder is created with the name you specified.

Delete(Folder- File)

Select a folder; and display its shortcut menu from which; choose the command *Delete*; to delete the specified folder

Naming (Folder -File)

Select a folder; and display its shortcut menu from which; choose the command *Rename*; to give a new name to the specified folder

Exercise (1)

Creating Project Folders

After completing this exercise, students can create folders to save the project data files.

With the help of your teacher, work with your colleagues to envision how many folders will be created within the project, their suggested names and, the types of files that will be saved in each of them.

Discuss with your teacher and your colleagues the following points:

- Identify the main folder used to save the project?
- Suggest a name for the folder used to store the files of the following:
  - Countries' Flags.
  - Countries' National Anthems.
  - Video clips for each Country.
  - Countries' Maps.
  - Continents and Countries Names and, related data.
  - Voice narrations associated with the project.

With the help of your teacher, work with your colleagues to create the folders associated with the project on the hard disk.

<u>Search through the Internet</u>

The Internet provides many services, including the search service, through which we can search for different types of information (digital- audio- text- images) the search of information is done by using keywords. There are many internet sites that offer search services, called Search Engines.

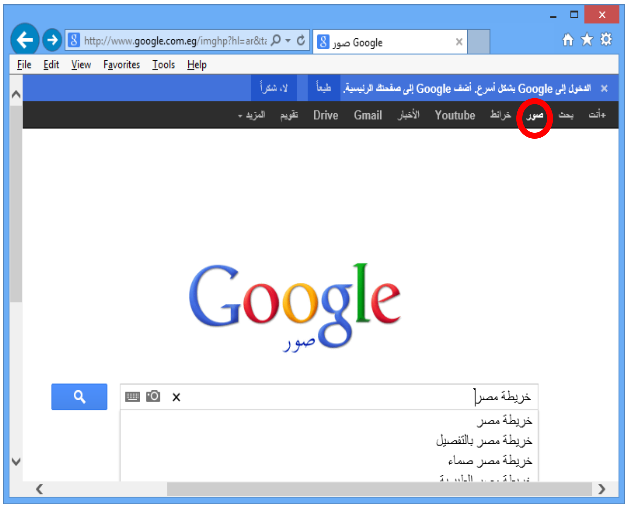
1-Search engines:

There are many famous Search Engines:

- Search Engine www.google.com
- Yahoo Search Engine www.yahoo.com

We can use the search engines for searching information through the Internet, and saving this information on the computer, or we can copy from the Internet, and paste it in a document on the computer.

Download the file (voice- video- image)



We can use the Internet to search for these files and save them on the computer. If we want to search for "**Egypt map**"

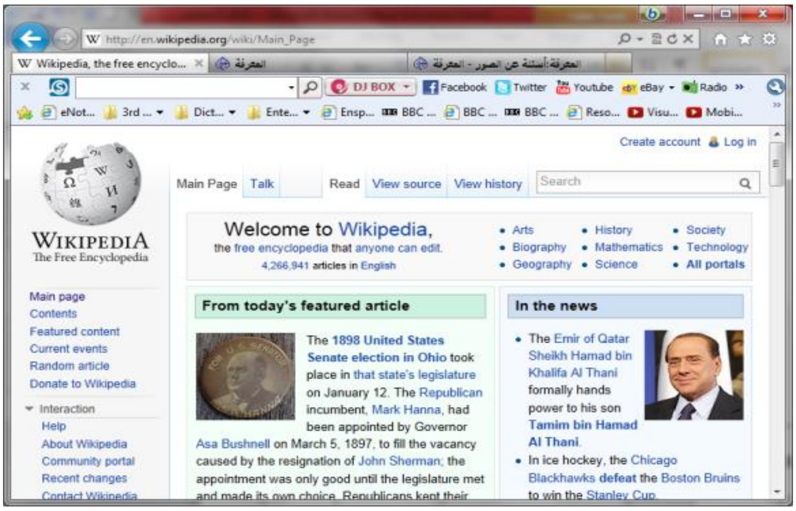
- We use the appropriate search engine.
- We specify the keyword "**خريطة مصر**" or "**Egypt map**."



- Then we identify the type of information required (images or maps).
- Finally we save the map as an image file into one of the Folders that have been created.

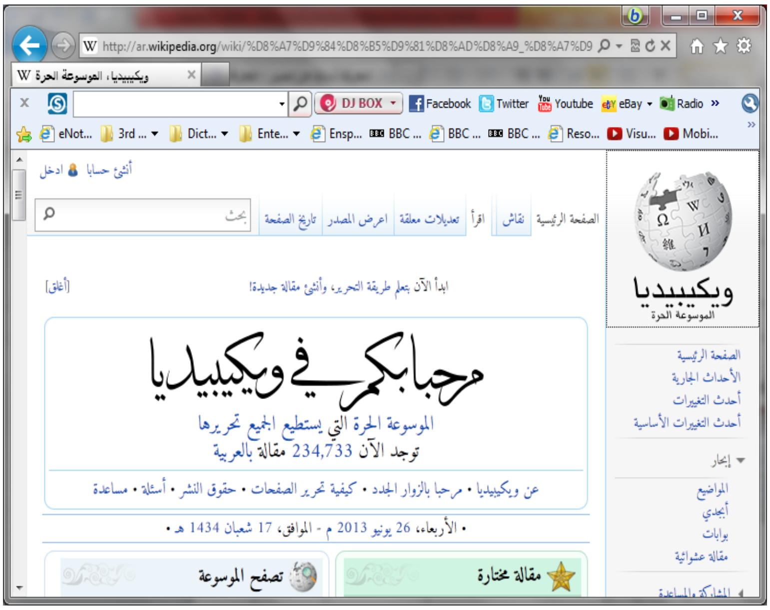
You can search for all the required types of files within the project (Sound - Image- Video) ... download and store it inside the folders, (teacher should confirm search results that will be shown to the student and saved on the computer).

2-Search inside electronic encyclopedia



Encyclopedia is a distinct type of reference that shows a structured summary of knowledge in a particular field, and is arranged in accordance with a certain classification; that facilitates searching of required information such as: alphabetic order.

Importance of encyclopedias



It provides an overview of one of the topics and the facts accompanied with articles, tables, images, forms, maps and bibliographic sources. Encyclopedias especially the dedicated ones provide instant inquiries and show summaries for specific topics, Encyclopedias are characterized by the diversity and huge amount of different types of information displayed, and the easiness of searching and quick access.

Among the most important encyclopedias the Wikipedia

http://en.wikipedia.org/wiki/Main_Page

http://ar.wikipedia.org/wiki/

Organizing encyclopedias

There are two ways to organize information contained in encyclopedias:

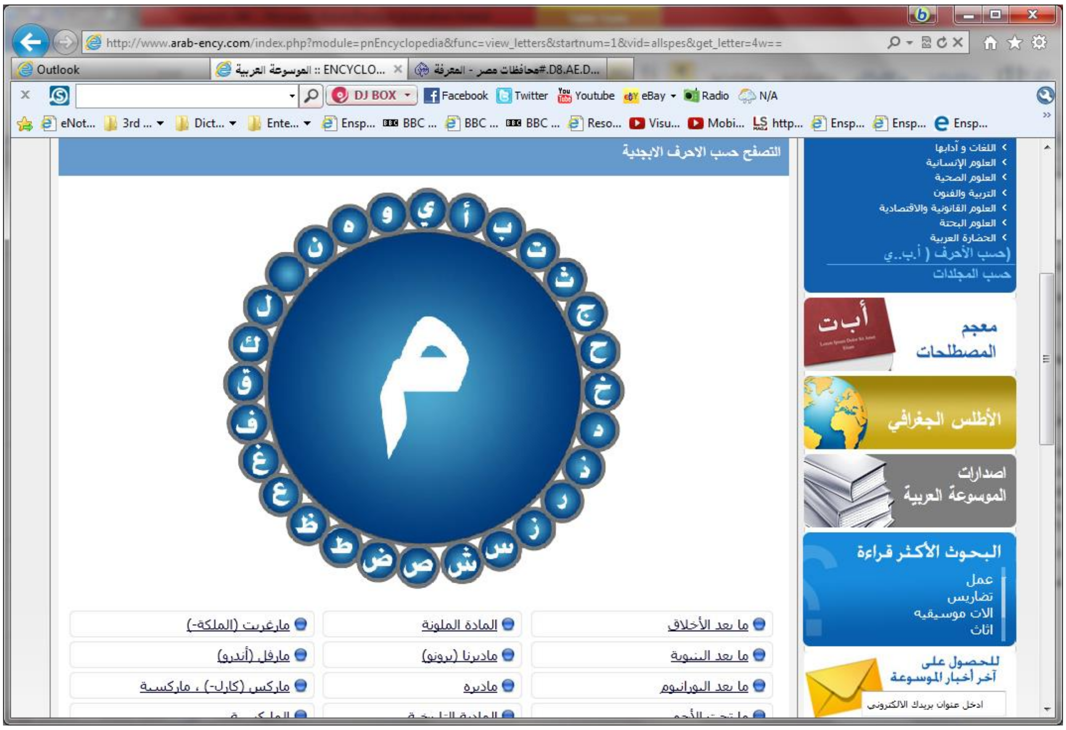
1- Sorting by alphabet

2- Sorting by scientific classification or by topics

We can search through electronic encyclopedias for the required information



Information Encyclopedia



The Arabic Encyclopedia

Exercise (2)

Cooperate with your colleagues to search through the Internet (using appropriate keywords); for the files: (Map –flag -National Anthem -.......) that belong to the countries specified in the project which i.e. (Egypt -Libya -Tunisia -Algeria - Morocco - Saudi Arabia-Kuwait-Oman-Qatar -Yemen)

Then save these files in the folders you have created with your group.

- ✓ *The teacher divides the students into groups and gives each group a number of countries.*
- ✓ *The teacher helps students to identify keywords for search.*

- Students use one of search Engines for the purpose of searching for the files of countries and saving them on the computer.
- Students collect data from the rest of the groups to complete all the files of the countries for each group.

القارة	الدولة	العاصمة	من أهم الموانى	من مصادر المياه
أسيا	السعودية	الرياض	جدة	وادى فجر - أبو جيدة
أسيا	الكويت	الكويت	الأحمدي	وادى الباطن
أسيا	اليمن	صنعاء	عدن	وادى الخارد
أسيا	قطر	الدوحة	الدوحة	تحلية الخليج العربى
أسيا	عمان	مسقط	مسقط	وادى العين - مسلم
أفريقيا	مصر	القاهرة	الأسكندرية	نهر النيل
أفريقيا	ليبيا	طرابلس	بنغازى	وادي زمزم - بي الكبير
أفريقيا	تونس	تونس	صفاقس	وادى مليان - مجرادة
أفريقيا	الجزائر	الجزائر	وهران	وادى تمانراست
أفريقيا	المغرب	الرباط	الدار البيضاء	نهر الربيع - بورقراق

Arabic Countries selected

Questions

<u>The first question</u>

Tick (✓) in front of the right sentence and sign (✗) in front of wrong sentence:

1-Electronic encyclopedias are considered one of the search engines on the Internet. ( )

2-It is better to name folders with names suitable for the content of its files and folders. ( )

3-The site www.google.com is one of the search engines for searching information through the Internet. ( )

4-Encyclopedias are considered a special kind of references that provide the most important information and facts related to various human knowledge or part of it. ( )

5-A File consists of a group of Files and Folders. ( )

<u>The second question</u>

Choose the correct answer of the following

1-a single folder may contain ....

(A) multiple files. (B) several folders

(C) empty folders. (D) all of the above

2-The following Internet sites are considered one of Search Engines except….

(A) www.twitter.com. (B) www.google.com

(C) www.yahoo.com. (D) www.Altavista.com

3-Electronic encyclopedias are characterized by ....

(A) Fast and easy search for information.

(B)The diversity and enormousness of the forms of information

(C) Lack of information inside them.

(D) Both (A) and (B**)**

<u>Third question</u>

What is the purpose of using electronic encyclopedia?

....

....

Topic Three

Collecting Project's data using Spreadsheets applications

Learning Outcomes:

At the end of the Topic student can:

(1) Identify Database files.

(2) Create a new Workbook.

(3) Enter data in a worksheet in the Workbook.

(4) Rename the Worksheet.

(5) Save the new Workbook.



Spreadsheets applications

Spreadsheets applications are programs designed for collecting data in an organizing way. You can enter and, manage data easily; you can also retrieve the enquired information.

Why should we use Spreadsheets Applications?

We use Spreadsheets applications to manage a large amount of data through datasheets or worksheets easily, quickly and accurately.

What are Spreadsheets?

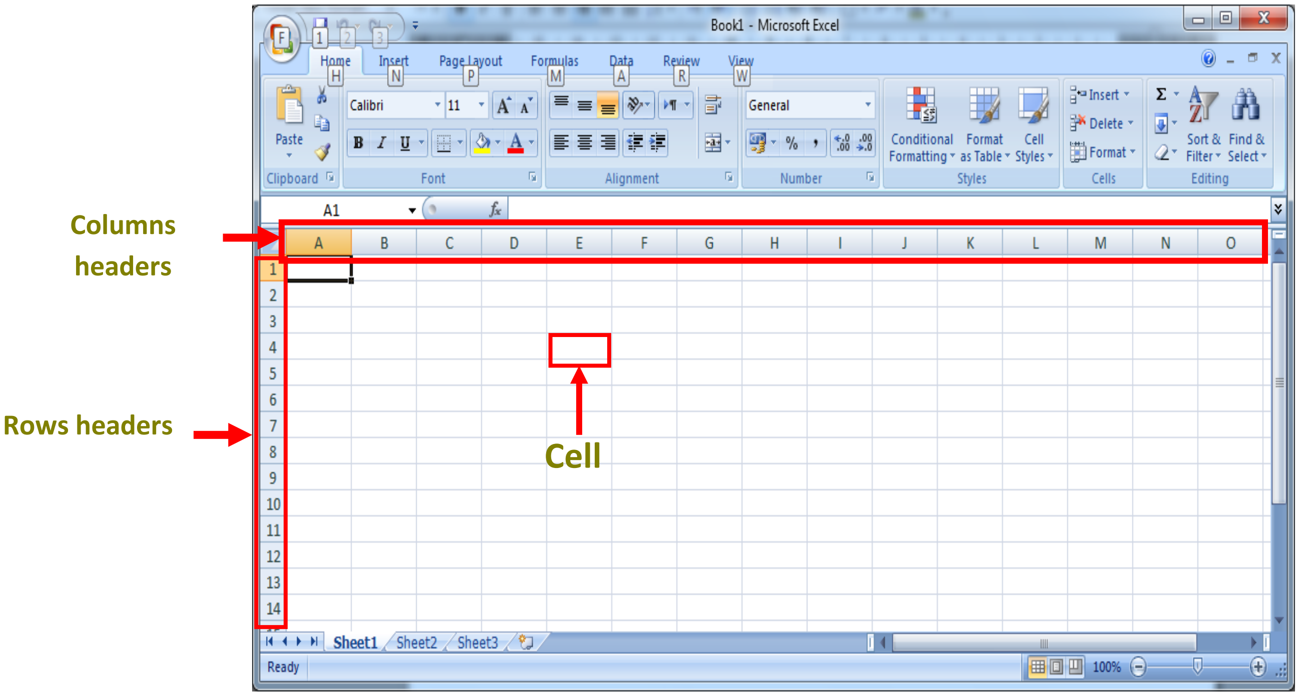
A spreadsheet is a workbook made up of many different worksheets or spreadsheets. A spreadsheet consists of columns and rows; it is made up of cells. A cell is the intersection of each row and column.

So let's remember ……

- **Columns**
  The columns headers are identified by alphabet letters: 'ABC,…'. These letters are used to specify the location of each column.

- **Rows**
  The rows headers are identified by numbers: '1,2,3,…..'. these numbers are used to specify the location of each row.

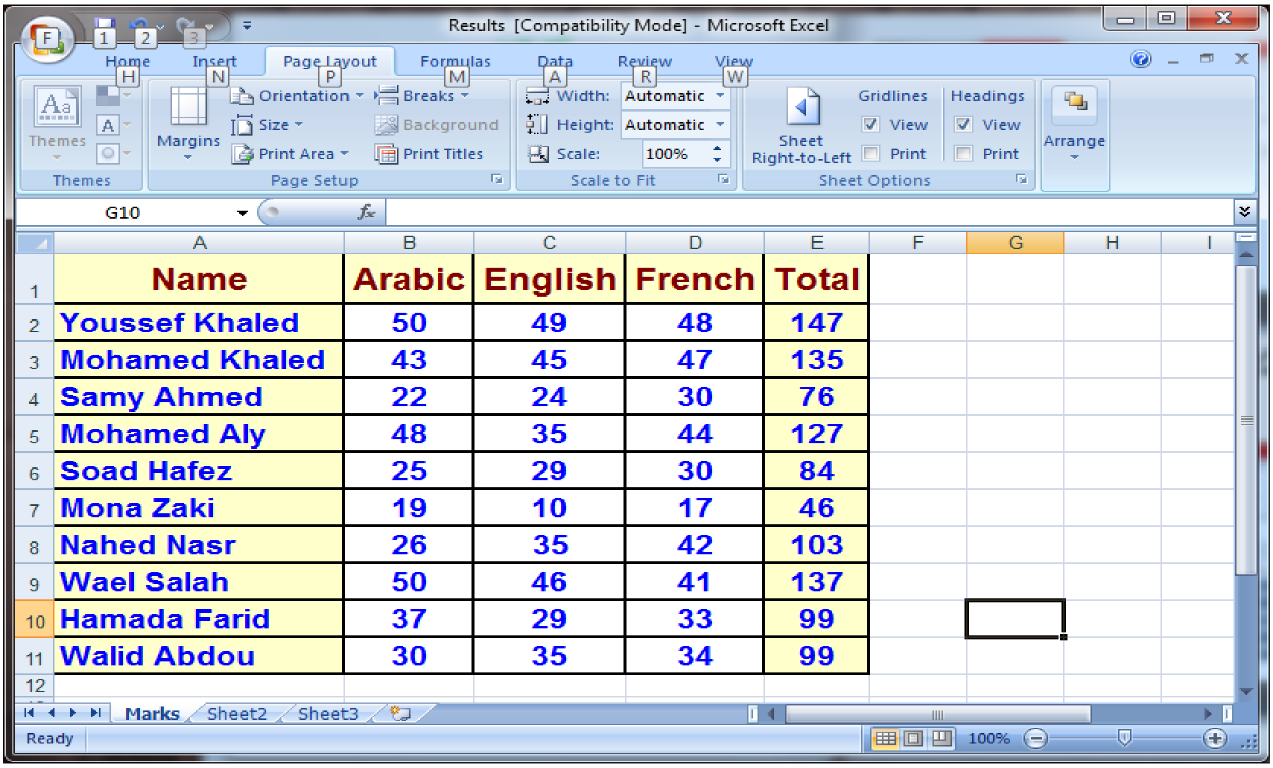
The number of worksheet columns and rows vary according to the Spreadsheet application version.



What are the types of data that can be located in a cell?

There are three basic types of data that can be inserted in the table cells, they are:

- Text data (letters or texts)
- Numeric data (numbers)
- Formulas (mathematical formulas)



Name	Arabic	English	French	Total
Youssef Khaled	50	49	48	147
Mohamed Khaled	43	45	47	135
Samy Ahmed	22	24	30	76
Mohamed Aly	48	35	44	127
Soad Hafez	25	29	30	84
Mona Zaki	19	10	17	46
Nahed Nasr	26	35	42	103
Wael Salah	50	46	41	137
Hamada Farid	37	29	33	99
Walid Abdou	30	35	34	99

Exercise

Creating a Spreadsheet file

With the help of your teacher; download one of the Spreadsheets applications.

Cooperate with your colleagues in the group to create a worksheet and enter data which you have searched and then collected and saved into files and folders

Steps to follow:

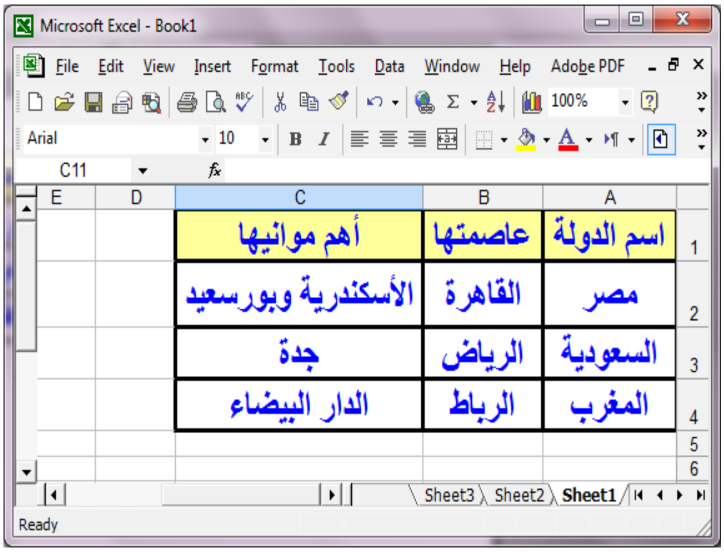
- The teacher divides the students into groups.
- The teacher helps the students to download one of the Spreadsheets applications
- The students create a workbook to enter the following data which you have searched in one of the Search engines or Encyclopedias (the continent-the country-the capital- the main ports- water resources).
- Rename the worksheet as (Data).
- Save the workbook as (Atlas) in the path C:\Databases

E	D	C	B	A	
من مصادر المياه	من أهم الموانى	العاصمة	الدولة	القارة	1
وادى فجر - أبو جيدة	جدة	الرياض	السعودية	أسيا	2
وادى الباطن	الأحمدي	الكويت	الكويت	أسيا	3
وادى الخارد	عدن	صنعاء	اليمن	أسيا	4
تحليه الخليج العربى	الدوحة	الدوحة	قطر	أسيا	5
وادى العين - مسلم	مسقط	مسقط	عمان	أسيا	6
نهر النيل	الأسكندرية	القاهرة	مصر	أفريقيا	7
وادي زمزم - بي الكبير	بنغازى	طرابلس	ليبيا	أفريقيا	8
وادى مليان - مجرادة	صفاقس	تونس	تونس	أفريقيا	9
وادى تمانراست	وهران	الجزائر	الجزائر	أفريقيا	10
نهر الربيع - بوقراق	الدار البيضاء	الرباط	المغرب	أفريقيا	11

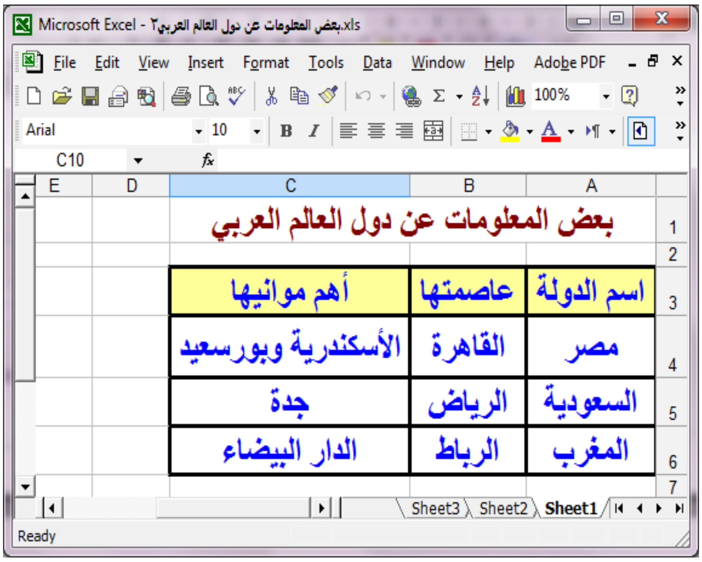
Discussion

- Can other types of data (pictures, sounds, or videos) be entered into the Spreadsheet cells?
- What is meant by 'Database'?
- What are the Application programs that can be used to create a Database?

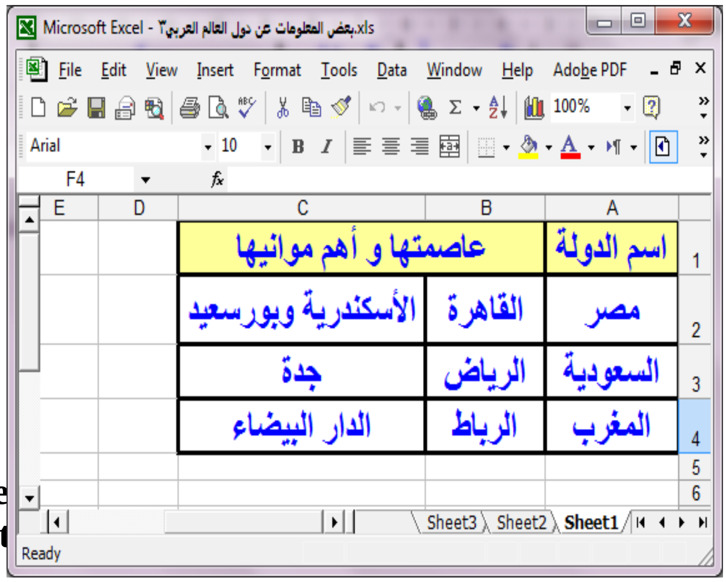
Which of the following tables can be considered a Database file?



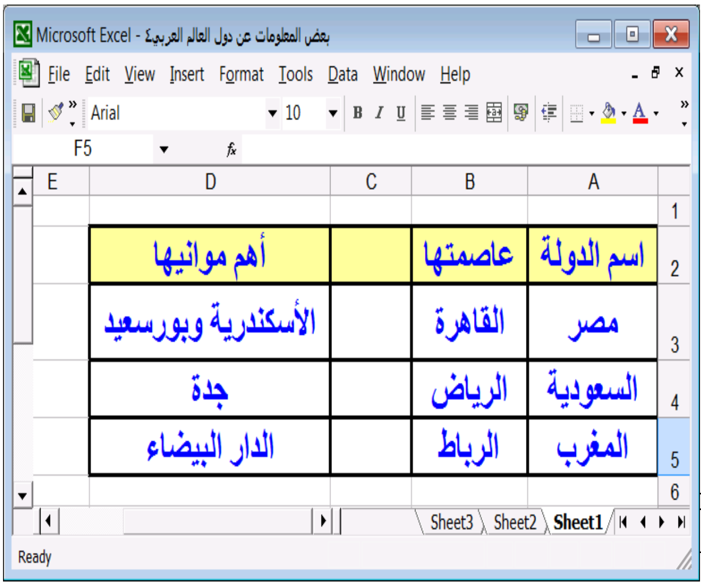
شكل (1)



شكل (2)



شكل (3)



شكل (4)

<u>The Table is formed of:</u>

A group of <u>Rows</u> and a group of <u>Columns</u>; where :
Each <u>Row</u> represents a <u>Record</u>, and each <u>Column</u> represents a <u>Field</u>, and each <u>Field</u> contains <u>Data</u>.

أعمدة (Columns)

أهم موانيها	عاصمتها	اسم الدولة
الأسكندرية وبورسعيد	القاهرة	مصر
جدة	الرياض	السعودية
الدار البيضاء	الرباط	المغرب

صفوف (Rows)

حقول (Fields)

أهم موانيها	عاصمتها	اسم الدولة
الأسكندرية وبورسعيد	القاهرة	مصر
جدة	الرياض	السعودية
الدار البيضاء	الرباط	المغرب

سجلات (Records)

حقل (Field)

أهم موانيها	عاصمتها	اسم الدولة
الأسكندرية وبورسعيد	القاهرة	مصر
جدة	الرياض	السعودية
الدار البيضاء	الرباط	المغرب

سجل(Record)

<u>From the previous ***Table***, the following can be concluded:</u>

- 'مصر _ القاهرة_ الأسكندرية وبورسعيد '_represent a row or a ***Record***.
- Each of the following "اسم الدولة", " أهم موانيها "," عاصمتها " represents one ***Field*** each from the whole fields of each record.

Questions

Question (1)

Tick(✓) next to the correct answer, or (×) next to the wrong answer:

1- Spreadsheets program can be used to create a database. ( )

2- The column in a database represents one record ( )

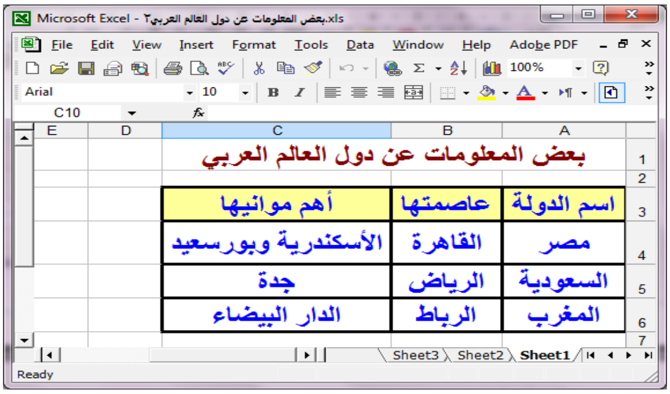
3- In Spreadsheets program, a Data Table is made up of a group of rows and columns. ( )

4- The Spreadsheets programs can be used to collect and organize data for use. ( )

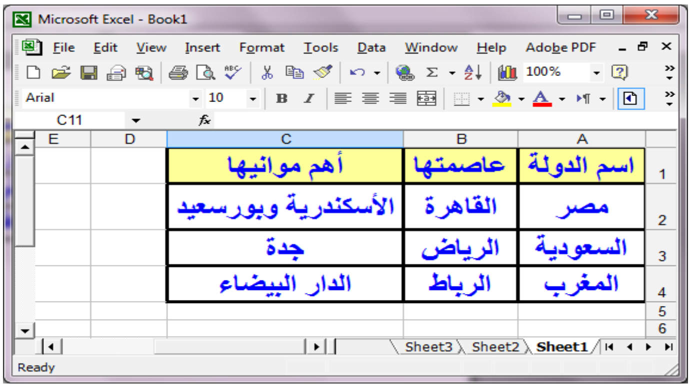
5- The workbook can be saved and considered a database file ( )

Question (2)

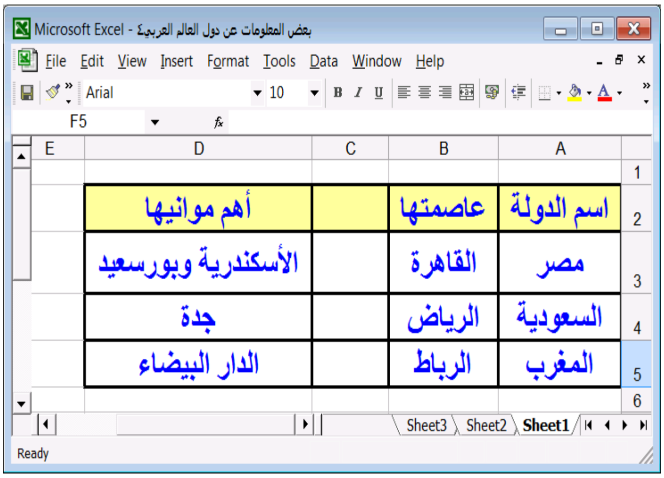
From the Following there are 3 tables that can’t be considered database files in a Spreadsheet program. Name these figures and give the reason.



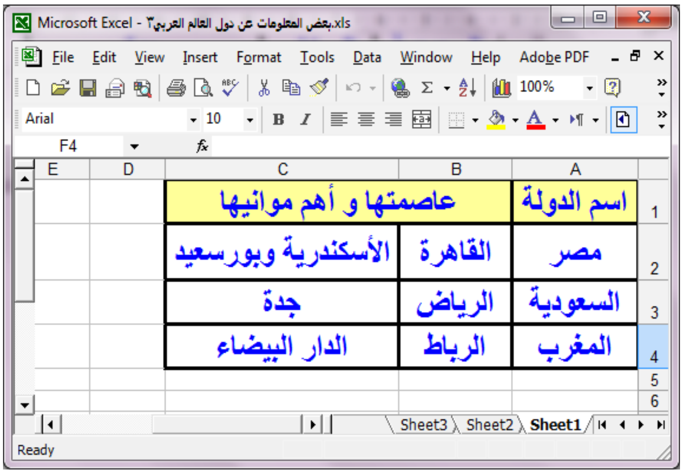
شكل (2)



شكل (1)



شكل (4)



شكل (3)

....

………………………………………………………………………

………………………………………………………………………

Question (3)

1) Read the following table, and then fill in the blanks:

اسم الدولة	عاصمتها	أهم موانيها
مصر	القاهرة	الأسكندرية وبورسعيد
السعودية	الرياض	جدة
المغرب	الرباط	الدار البيضاء

a) The shown table is formed of……….. rows, and ………… columns.
b) Each row represents …..…….. and each column represents a field.
c) The following: 'اسم الدولة"', ………… , …………., are fields in the table.

2) Mention the types of data you can enter in Spreadsheet cells:
a)……………… b)………………… c) …………………

3) Can other types of data (pictures, sounds, and videos) be entered in table cells?

………………………………………………………………………

………………………………………………………………………

………………………………………………………………………

………………………………………………………………………

………………………………………………………………………

Topic four

Edit and design images

Learning Outcomes:

At the end of the Topic, students will be able to:-

(1) Identify some Image Editing software.

(2) Distinguish between different kinds of image files.

(3) Download image files from the internet.

(4) Modify picture's size.

(5) Add effects to picture

(6) Crop a part of a picture.

(7) Save picture files with different extensions.

(8) Design images for the background of the project.

(9) Explain what animated Picture means.

(10) Design an animated picture.



Image-editing software.

Image-editing software are programs that enable a user to create and edit pictures through many tools in a good, easy and fast way.

What differentiates between one user and another who use these programs is the choice of the suitable program to perform a specific task. Despite of the similarity of most of these programs in their tools, the essential difference of these tools distinguishes a program from another.

There are many programs that you can use for doing specific task as editing pictures, some of them are:

- **CinePaint (O/S Linux)**
- **PicsArt (O/S Android)**
- **Paint.NET (O/S Windows)**

Dear student, you can ask your teacher's help and search through the internet for free image editing and download software.

There are several Types of image files that have different extensions like:

Bmp - gif – eps -jpg - pcx – png - wmf - tif - ..etc.

But what types of image files are appropriate for the project?

To answer this question; read and answer the next questions:

1-What is the storage file size for the picture file?

2-Whai is the amount of **free** disk space **available for the project**?

3-Does the picture is an image or animated picture?

4- Do you need the image with a transparent background?

Some types of pictures that we collect or display using the computer are briefly divided into two main types according to its processing inside the computer:

1- Vector Graphics:

Vector graphics are based on mathematical expressions—to represent images in computer graphics; they are not affected by scaling (enlarging or reducing their

size) where image scaling doesn't reduce picture quality. Vector files are characterized by their small storage size; and their type such as eps, emf and wmf.

2-Raster Graphics

Raster graphics image is a dot matrix data structure; raster images are affected by scaling (enlarging or reducing their size) where image scaling reduce picture quality. Raster files are characterized by their large storage size; and their type such as raw, bmp, tiff, gif, jpg, png.

When you browse the internet websites, you notice a lot of these pictures 'types either photos or animated pictures and each of them have its characteristics.

And you can also notice that, some pictures are displayed on the screen rapidly and others take a longer time (they are displayed line by line from up to down to be completed with high quality).These pictures have attributes that are determined by the extension type of each of them; which produce the quality of the picture and its storage size .

The Characteristics of some pictures types.

The type raw





This type can't support the animated picture and its transparency. We can get it through some accurate digital cameras. The size of the picture is very big when saving it compared with other types. When we deal with this type, a user has to try to convert it into one of the pictures types because of having a few programs to deal with.

This type can save a picture in high quality compared with jpg.

The type gif

This type supports animation and transparency. It is inadvisable to use it in saving pictures of high number of colors and gradients colors; in order not to be distorted. It's advisable to use it for simple pictures that have few colors and of small sizes. This extension is an abbreviation of (Graphical Interchange Format)

The type bmp

It is a type of fixed picture files that support neither transparency nor animation, but we can deal with it through well-known Operating systems specially Windows Operating System in different versions. This type is mostly of a big size and high quality and high colors compared with gif. The .bmp extension is an abbreviation of (Bitmap).

The type jpeg

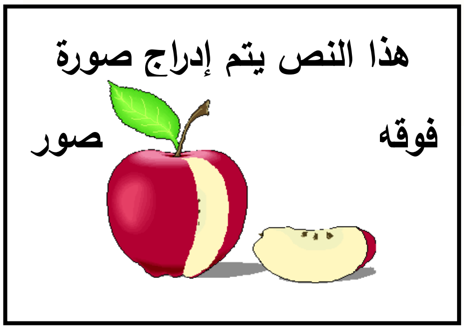
This type is one of the most famous and widely used types compared with others; where the team of (Joint Photographic Experts Group) has developed it, so it carries his name. This type has other extensions: jpe and jpg. Digital cameras support it and we can find it mostly on web pages; this type of extension doesn't support neither animation nor transparency, but it has 16 million colors.

The type png

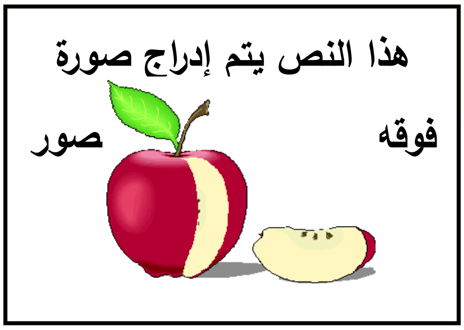
This type supports transparency and doesn't support animation. It handles million colors, so it's advisable to use it with pictures that have transparent background even if it has a lot of colors and gradients ones. This extension is an abbreviation of (Portable Network Graphics).

The type wmf

This type supports transparency and doesn't support animation; it is based on mathematical expressions—to represent images ; this type is not affected by scaling (enlarging or reducing their size) where image scaling doesn't reduce picture quality; and it is characterized by its small storage size. This extension is abbreviation of (Windows Meta File).



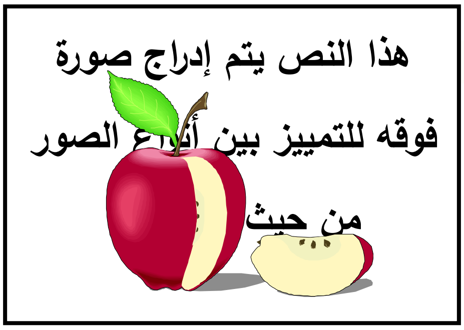
النص و فوقه صورة من النوع
the picture is above the text



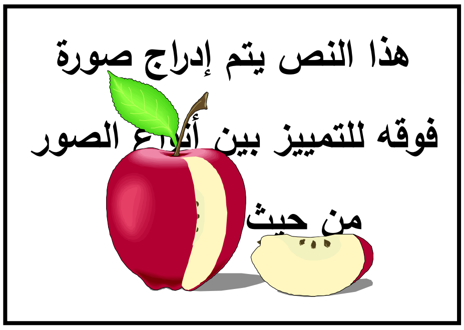
النص و فوقه صورة
the picture is above the text

هذا النص يتم إدراج صورة
فوقه للتمييز بين أنواع الصور
من حيث الشفافية.

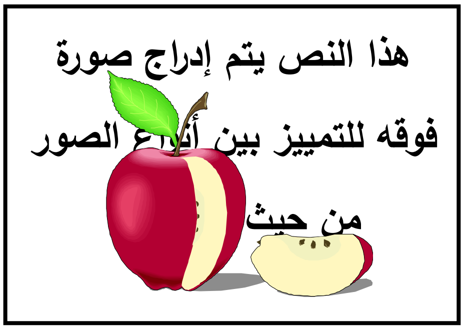
النص بدون صورة
the text without picture



النص و فوقه صورة من النوع
the picture is above the text



النص و فوقه صورة من النوع
the picture is above the text



النص و فوقه صورة من النوع
the picture is above the text

Notes:

1-All of these types of pictures are fixed except for gif type. It can be fixed and animated pictures.

2-Bmp , jpg , gif , png , wmf are types of pictures that you can use in Visual Basics.net application.

3-There are many Applications Programs that manipulate different types of pictures according to its kind and its potentiality. Some programs enable you to convert from a picture type to another.

4-The picture file type "bmp" can be used with many operating systems.

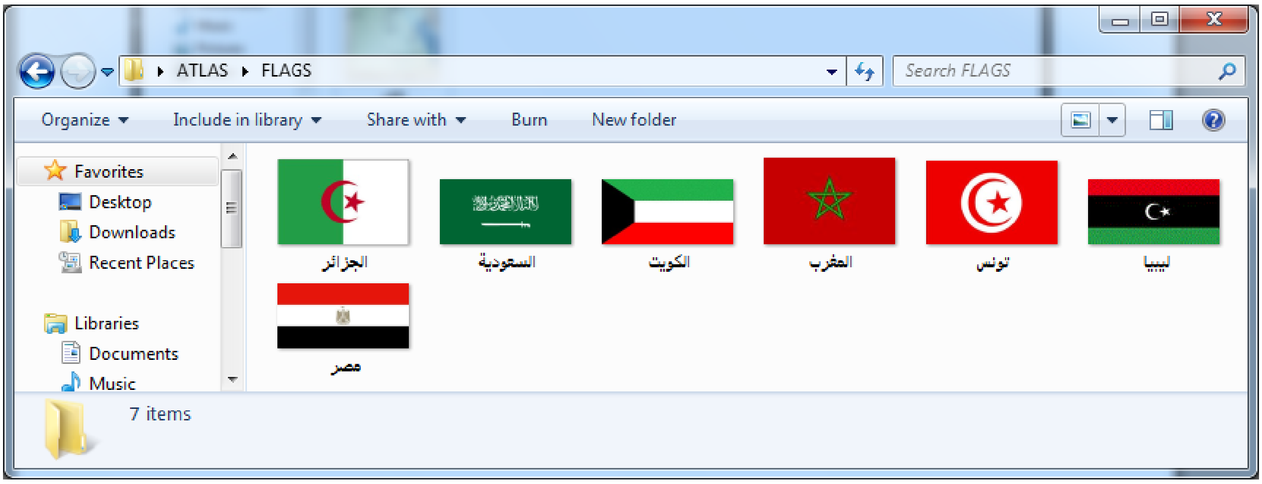
Downloading picture files via the internet

Through our previous study, we can download many pictures via the internet by using one of the search engines for downloading the following picture files:

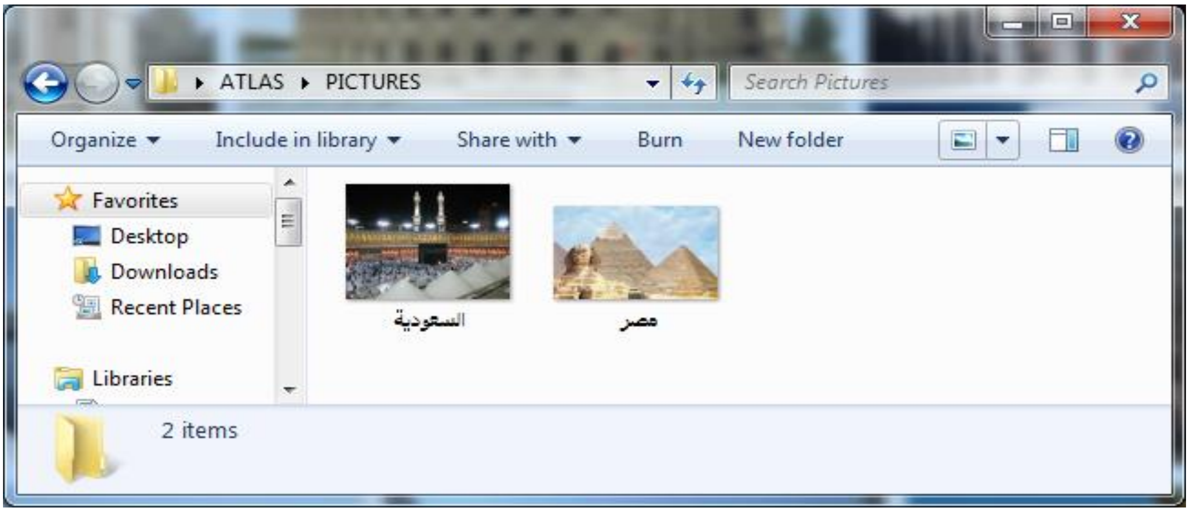
- Pictures of Arab countries maps; and saving it in the subfolder *Maps* inside the main folder *Atlas*.



- Pictures of Arab countries flags; and saving it in the subfolder Flags inside the main folder Atlas.



– Pictures of the most important tourist places for Arab countries and saving it in the subfolder *Pictures* inside the main folder *Atlas*.



Editing Picture

The pictures that were saved inside the folders of (Electronic Arabic Atlas) Project can be edited in terms of: Adjustment of picture size, adding effects, cutting part of the picture, then save the picture in the file with a suitable extension, through one of Image editing programs.

Exercise (1)

Differentiate between types of pictures 'files

After completing this exercise, students will be able to:

- Identify types of picture files.
- Differentiate between some picture files

Q1- Open one of Image editing programs, for example: Paint Brush program saved on your computer; under your Operating system, download an available picture with type: wmf (then try to save it again (Save as) many times on your PC file without making any change in it with the following types: .bmp, .gif , .png , .jpg.

Answer the following

1. Specify the files 'names of pictures that support transparency?
2. Specify the files 'names of pictures that are animated pictures?
3. Specify the files 'names of pictures that are less in storage size?
4. Specify the files 'names of pictures that are bigger in storage size?

Exercise (2)

Editing Picture

After completing this exercise, students will be able to:

- **<u>Set picture size.</u>**

  To set picture size is to change the dimensions of a picture: (height-width) through the following steps:

  - Download one of Image editing programs.
  - Open Arab Republic of Egypt ***Picture Map*** file from folder ***Maps*** inside the Folder ***Atlas***.
  - Change the size of the Map to suit the allocated area in the project, When you activate the picture, you find 8 points, through which you can change the dimensions of the picture.



After adjusting the picture size



Before adjusting the picture size

Discuss with your teacher does the modification of picture size lead to the change in storage size of the picture file?

Exercise (3)

Adding effects to pictures

After completing this exercise, students will be able to:

- **<u>Add effects to pictures.</u>**

  To add a certain effect to the picture, this means we can add an effect to a certain part inside the picture; to be highlighted in the picture and attain certain objective of using this picture.

  In the last map of Arab Republic of Egypt, we want to add an effect to the capital, Cairo .Then you should make a free choice for the part you want to add the effect to, then open the list of effects and add a suitable effect to it.



After adding effect



Before adding effect

Exercise (4)

Editing pictures

After completing this exercise, students will be able to:

- **<u>Crop part of the picture.</u>**
- **<u>Save the picture in a file with appropriate extension.</u>**

Crop out part of the picture.

Sometimes we want to cut a certain part of the picture or delete some parts. In the picture map of "***Arab Republic of Egypt***", to cut part of it for example the capital, ***Cairo***, we use the cut tool (**CROP**) from the toolbar of the ***Image editing program.***





"The cropped image"

The picture before using the crop tool

Saving a picture inside a file with a suitable extension:

After making the required modifications to the picture, save it with file name and with extension “gif” and saved it with the extension “jpg “inside the subfolder Maps in the main folder Atlas.

With the help of your teacher, compare the saved files according to the storage size, accuracy and transparency.

The second picture



<u>Egypt.gif</u>

The storage size of the file is………
The Clearance and accuracy is………

The first picture



<u>Egypt. JPEG</u>

The storage size of the file is………
The Clearance and accuracy is………

Adding an image as a background in the project design

When you start planning the (*Electronic Arabic Atlas*); adding background design will be expressive for the project, this is done by using one of the Image *Editing Software* this is illustrated in the following exercise:

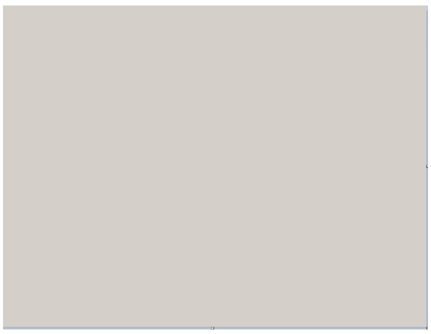
Exercise (5)

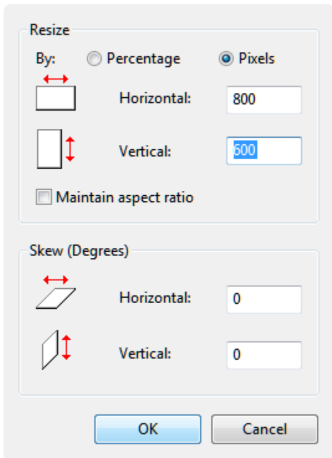
Design an Image

By the end of this exercise, student will be able to design an image as a background image for the project, most likely with the use of one of the *Image Editing Software*.

You can design and use an image as a background for your specific project as follows:

1- Choose the dimensions of the image to be designed, fitting the dimensions of the project interface (width, height).
2- Use the available tools for editing and processing images for background design.
3- Suppose that the window dimensions for the project interface are: 800 pixels x 600 pixels.
4- Adjust the dimensions of the workspace before starting image design; to be as the same dimensions as the window project interface; using the Image Size or Resize tool.



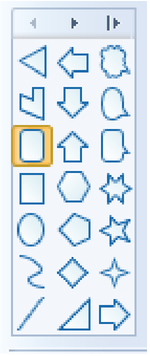


5- Use the fill color tool,  (Bucket Fill)and fill the specified area with a suitable color.



6- You can use *Drawing tools and shapes* available to design image**.**





Exercise (6)

Adding effects and text on an image

After completing this exercise student recognize the tools for adding effects and text on image already designed

1- Add gradient effect on images



2- Add text to image



3- Insert an image instead of the fill color**.**



4- Save the image with an extension and give it a filename " خلفية المشروع" in the subfolder "*Pictures*" under the main folder "*Atlas*"

Design an animated picture

An animated picture is a collection of pictures that you have to insert one after the other in frames, inside a timeline. You adjust the interval between each frame; so that the pictures appear to be moving.

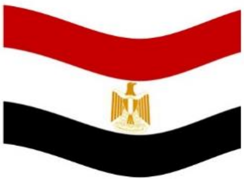
Exercise (7)

Design an animated picture

This exercise is an extra activity that instructs students how to design an animated picture using multimedia software:

1- Download one of the multimedia programs that help you create animated pictures (with the help of your teacher search the Internet on free software to create animated pictures).

2- Download the flag files (e.g. Egyptian Flag files) saved in the subfolder "*Pictures*" under the main folder "*Atlas*" that are illustrated as follows:

Flag file (1)	Flag file(2)	Flag file(3)	Flag file(4)
			

3- Insert each picture inside a frame in a sequential order; inside the timeline.





4- Adjust the interval between each frame.



5- Press the *Play button*  on the *Monitor*; the flag picture appears to be moving and waving like a flag.

6- Save this animated picture with *Gif* extension; in the subfolder "*Pictures*" under the main folder "*Atlas*".

Questions

First question

State whether the following statements are true (√) or false (✖)

No.	The statement	(✓)	(✖)
(1)	The picture of type .gif is characterized by its greater number of colors and sharpness than the .jpg type	○	○
(2)	You can use an image editing software to delete part of a sound file.	○	○
(3)	When creating Web sites it is better to use .bmp images .	○	○
(4)	You can add effects on pictures' sections ; using Graphic design programs (ready-made applications).	○	○
(5)	The image of type .wmf has small size compared to the .bmp type.	○	○

Second question:

Fill in the spaces (Please refer to your teacher to confirm your answers)

1. Type four types of image files that can be inserted , into some of the control tools in the Visual Basic Language

   a) ………… b)………… c)………… d) ………

2. Image files can take the following extensions:

   a) ………… b)………… c)………… d) ………

3. Animated pictures files take the extension.......................

4. What does (Multimedia) mean and what are its components?

   ………………………………………………………………

5. Mention four advantages of using (Multimedia) in education?

   ………………………………………………………………

<u>Third question:</u>

Complete the following table with the appropriate file names listed:

Filename.raw - Filename.doc
Filename.gif - Filename.rft - Filename.png - Filename.wmf

Picture File that supports transparency; is not an animated picture and has larger size	Smaller file	larger file	Animated picture file
....	....	....	....

<u>Forth question:</u>

The most popular image file types that can be used in Visual Basic .net applications:

* .... * ....

* .... * ....

<u>Fifth question:</u>

Choose the correct answer

1. You can insert different types of image files using the control (PictureBox) except the file type:

   a-.Raw b-.bmp c-.jpg d-.gif

2. Image files take the extension

   a-.wmf b-.bmp c-.jpg d-all of the above

3. Animated picture files take the extension:

   a-. jpg b-. gif c-. png d-. wmf

Topic Five

Creating and manipulating Sound files

Learning Outcomes:

At the end of the Topic, students will be able to:-

(1) Identify some audio files formats (extensions).

(2) Recognize some of the audio editing applications.

(3) Download one of the sound editing programs.

(4) Record audio narration.

(5) Add changes on audio waveforms.

(6) Add effects on audio waveforms.

(7) Save audio files with appropriate format (extension).



Dear student,

You can search the Internet for audio/sound files of different types, identify, download and run these files on your computer. You can also obtain these files from cell phones or different storage media.

Audio files

1. **There are many audio files formats (extensions) such as: wav, wma, mp3.**

The following identify the famous audio types.

Wav type:

Wave file format is of high quality, and often used to store information about uncompressed raw audio data. (original sound, which have not gone through anyfile format, however, due to the amount of disk space that these files take up it is not common to be published or posted on Web sites. WAV files are universal, they can be utilized on many operating systems, and modified(compressed and converted to other file type of small size but with low quality) by many Audio editing programs, and WAV means (Waveform audio).

Mp3 type:

MP3 does not have nearly the same amount of quality as WAV file format, the MP3 format uses compression which actually save space and make the file smaller, it is not suitable for retaining "first generation" archived files. Various audio editing software can support editing and manipulating MP3 file format.

Wma type:

This type is the higher quality and lower distortions type compared to .MP3 file, only few audio editing software and operating systems can support editing and manipulating (.wma) file format knowing that .WMA files stands for (Windows Media Audio).

2. **There are many off-the-shelf applications that manipulate different file types, each program according to its related features, and some programs can convert from one file type to another.**

3. **In VB.net language, you can insert the appropriate controls in the (Toolbox) to play different types of Audio files.**

Exercise (1)

You have two Audio files with the same content, the first file is (Filename.wav) and the second is (Filename.mp3).

Write the correct expression in the appropriate place inside the table below.

High quality | **Smaller size** | **Low quality** | **Bigger size**

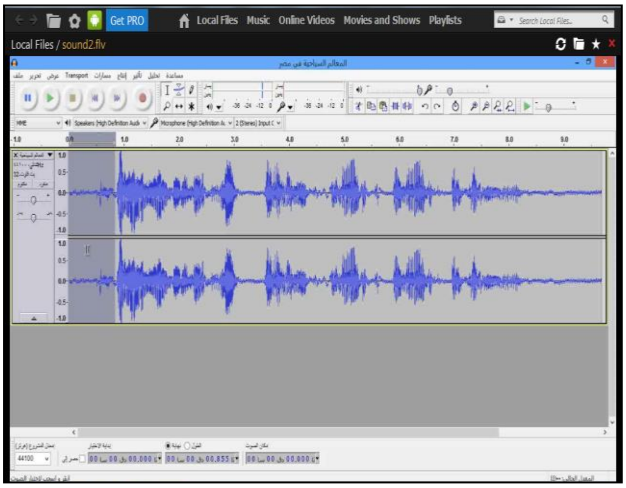
Comparison	Filename.wav	Filename.mp3
Storage capacity	..........(1).........	..........(2).........
The quality of the sound purity	..........(3).........	..........(4).........

Audio editing software

Audio editing software are programs that include a collection of powerful tools to generate sounds, add audio effects, recording, editing and performing other audio processing that enable user to edit and process audio files in a great way, quick and easy.

There are several programs that can be used for creating and editing audio files; cut large audio files, into parts, merge and editing them; some of them are:

- **(Audacity) (O/S Windows- Linux)**
  http://audacity.sourceforge.net/
- **(WavePad) (O/S Android)**
  https://play.google.com/store/apps/details?id=com.nchsoftware.pocketwavepad



Create a sound file

Audio files can be obtained from many sources such as the Internet or other sources; and insert these files in your project, such as the national anthem sound file for any of the Arabic Countries ;also the voice narration that you can record and compose to be added to video clips.

Where audio file requires the use of software to record sound and then save it in a file with the appropriate extension.

We will create an audio file that can be used as an audio narration, while watching the video clips of the major tourist attractions in Egypt.

Exercise (2)

Search for sound files

With the help of your teacher do the following:

- Search the Web for sound files or music files for the national anthem sound file of some of the Arabic countries.
- Save the sound files in the subfolder " *Anthem* " under the main folder "*Atlas*"

Exercise (3)

Create sound file

After completing this exercise students recognize how to create a sound file.

First: before you start recording, answer the following questions:

1- What is the theme or topic you want to record?
2- What are the sentences that will be recorded?
3- What are the sound file time, and the intervals between each sentence?

The answers of previous questions come as follows

- Assuming that the requested theme to be recorded is on the "Tourist Attractions in Egypt".

- Arranging and writing a set of sentences on the most important tourist attractions in Egypt, this requires first to take a look on the image files that you have collected with your colleagues in the subfolder " *Pictures* " under the main folder "*Atlas*".
- The sound file is identified by the number of sentences that will be recorded.
- Let's assume that the pictures that you search for "Tourist Attractions in Egypt", and the video file used are as follows:







- Compose and write sentences on each of the pictures above, with the help of your teacher "Geography teacher", you can search through the Internet to get accurate data for these attractions.
- Type the text (to be recorded) in one of the word processing programs, and then save it.

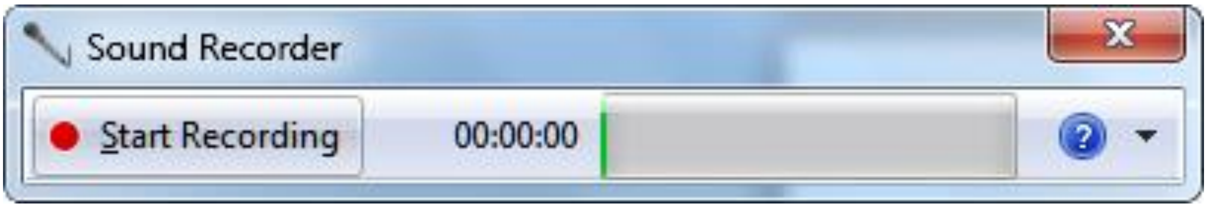
Second: Start voiceover recording steps through the following:

- Make sure that the microphone is connected to your computer.

- Download audio recording program (using Windows 7, from the Start menu, choose Accessories, then Sound Recorder ,using Windows 8 , choose the Start screen).

The Sound recording program appears.

- Start recording the required sentences



- Save the sound file with filename: "أهم المعالم السياحية في مصر" in the subfolder "Sounds" under the main folder "Atlas".
- Now, the narration becomes ready, you can use it in your movie file of the Attractions in Egypt.

Exercise (4)

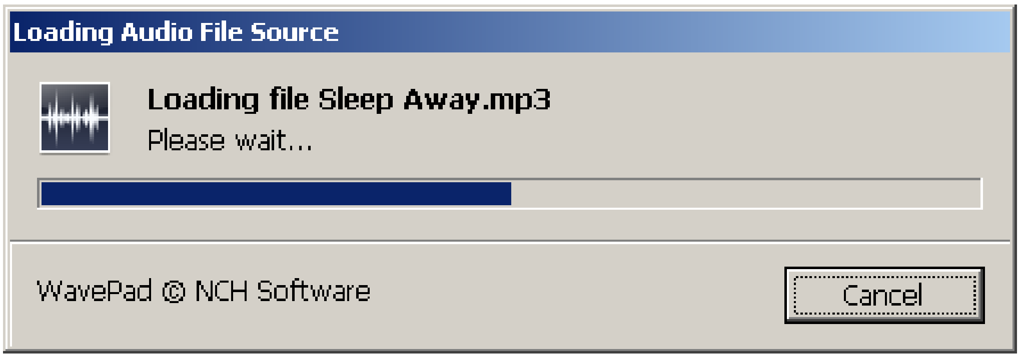
Editing Audio files

After completing this exercise student will recognize the tools for editing audio files.

- Download one of the audio editing programs.
- Download the audio file "أهم المعالم السياحية في مصر"inside the program.
- Delete a portion of an audio file.
- Cut a portion of an audio waveform, and paste it in another location on the waveform.
- Select a portion of the audio waveform.
- Duplicate a portion of the audio waveform.
- Recognize some of the audio effects.
-

- Save the audio file after being changed; with a suitable extension in the subfolder "*Sounds*" under the main folder "*Atlas*".
- Download one of the audio editing programs from the Web.

Open the sound file "أهم المعالم السياحية في مصر" that you saved. The program starts processing to read the audio file.

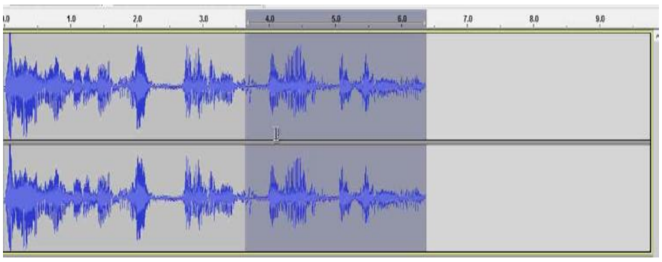


The sound file waveform is displayed on a timeline in the form of frequencies and a moving pointer called *head* or reading head that appears moving between various audio clips.



Using Audio Editing programs; you can make the appropriate manipulation to audio files like:

- Delete a portion of an audio file.
- Cut a portion of an audio waveform, and paste it in another location on the waveform in the same file or into another sound file.



- Duplicate a portion of the audio waveform (clip).
- Add another audio file into the current audio file.
- Add effects to specific clips or to the whole audio file like: amplify or reduce the sound volume.

With the help of your teacher, make the necessary adjustments to the audio file "أهم المعالم السياحية في مصر".

After completing the necessary modifications, save this file in the subfolder "*Sounds*" under the main folder "*Atlas*".

Questions

First question

State whether the following statements are true (√) or false (×)

No.	The statement	(✓)	(×)
(1)	You can apply audio effects on specific clips such as amplify or reduce the sound	○	○
(2)	You can use one of the audio editor software to modify the dimensions of the images.	○	○
(3)	The size of the audio file type .wav is smaller than the type .mp3 .	○	○
(4)	You can use one of the audio editor software to duplicate a portion of the (clip) inside the audio file.	○	○
(5)	You can use one of the audio editor software to delete a portion of the (clip) of the audio file..	○	○

Second question:

Complete the table, specifying name/names of the applications that run each type of the following audio files:

Audio file format	Name/Names of Applications used
.mp3	....
.wav	....
.wma	....

Third question:

Choose the correct answer

1. The following extensions are types of audio files; except:
   a-.wav b-.mp3 c-.png d-.wma

2. The smaller in size audio file is
   a- Filename.wav b- Filename. mp3 c- Filename. wma

Topic Six

Creating and editing videos

Learning Outcomes:

At the end of this Topic the student can:

(1) Recognize some types of video files.

(2) Recognize some Video editing software.

(3) Download one of video editing software from the Internet.

(4) Setup one of video editing software on your computer.

(5) Import image files.

(6) Create video clips using video editing software.

(7) Import audio files.

(8) Manipulating video files for adding or deleting files.

(9) Add effects to video clips

(10) Add transition effects between video clips.

(11) Save video clips in a file with the right format (extension).



Video files formats

There are different video file formats like: avi, wmv, gp , mp4.

3gp extension:

3gp video format produces a small file size of low quality; it is appropriate for mobile cameras and applicable with mobiles phones 'operating systems.

Mp4 extension:

Mp4 video format produces average file size of high quality compared with 3gp extension; it is appropriate for Mp4 devices.

Avi extension:

Avi video format produces a large file size of high quality compared with other formats; Avi video format is appropriate to computers and video cameras.

Whereas: in VB.net language, you can insert the appropriate controls in the (Toolbox) to run different types of video files.

There are many video editing applications that manipulate different video file formats (extensions); according to supported features for each of them. Some programs allow you to convert from one video file format to another. Also you can find a program that supports videos and pictures and play sounds.

Video editing software

It is the software that enables the user to create and modify videos (film material) and audio through a variety of tools and effects that help the user in creating and editing videos easily and quickly.

To edit a video file captured by a video camera or Web camera; you must use a program that split this video file into segments (set of snapshots) placed in a sequence; and accessible for editing, modification, addition, and deletion .These snapshots when passed quickly, it creates an impression as it moves.

There is much video editing software available through the Internet that can be accessed from the following links:

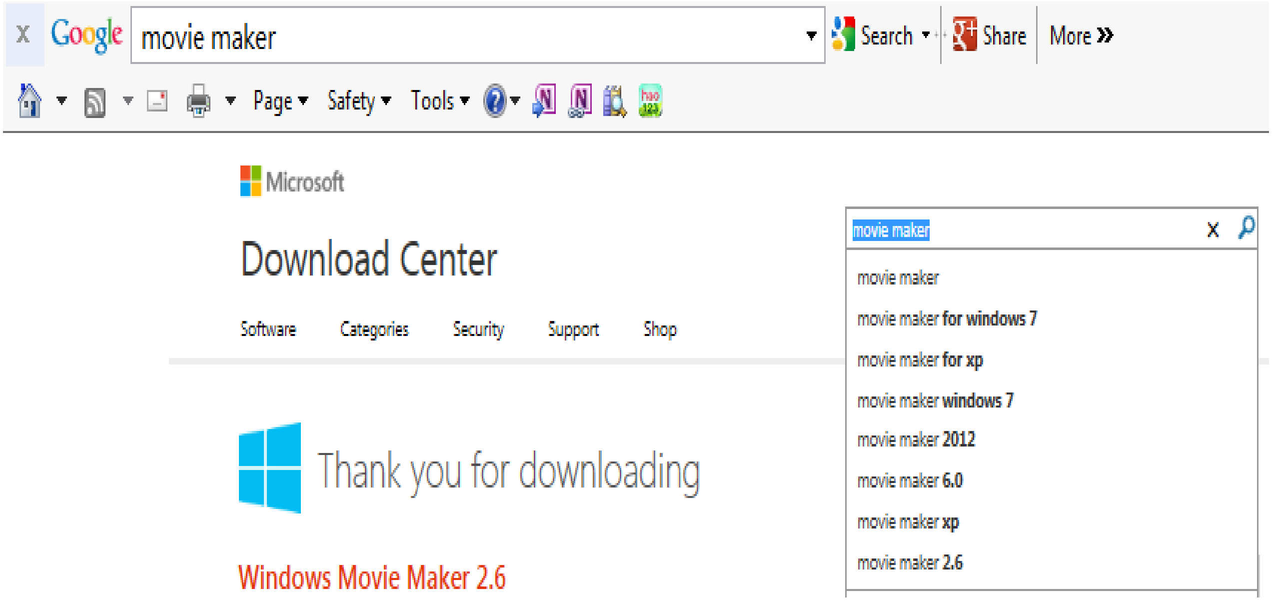
- **Kdenlive (O/S Linux)**
  http://kdenlive.org/
- **Video Maker (O/S Android)**
  http://play.google.com/store/apps/details?id=yong.app.videoeditor
- **Movie Maker (O/S Windows)**
  http://windows.microsoft.com/en-us/windows/get-movie-maker-download

To edit and processing video files for the Project; which are captured by a digital camera or Web camera or you have download from Internet sites; we will use "Movie Maker" software that can be accessed from the following link:
http://www.windows-movie-maker.org/

Exercise (1)

Download Movie Maker Program

With the help of your teacher, work with colleagues and browse the official website http://www.microsoft.com. In the search box, type "*Movie Maker*" the search results appear; choose from the displayed results what fitting the operating system on your computer



- Follow the displayed selections to download *Movie Maker* program and to install it on your computer:
- Open Movie Maker program.
- Describe the program' interface.
- With the help of your teacher; discuss with your colleagues what distinguishes the program' interface.

Exercise (2)

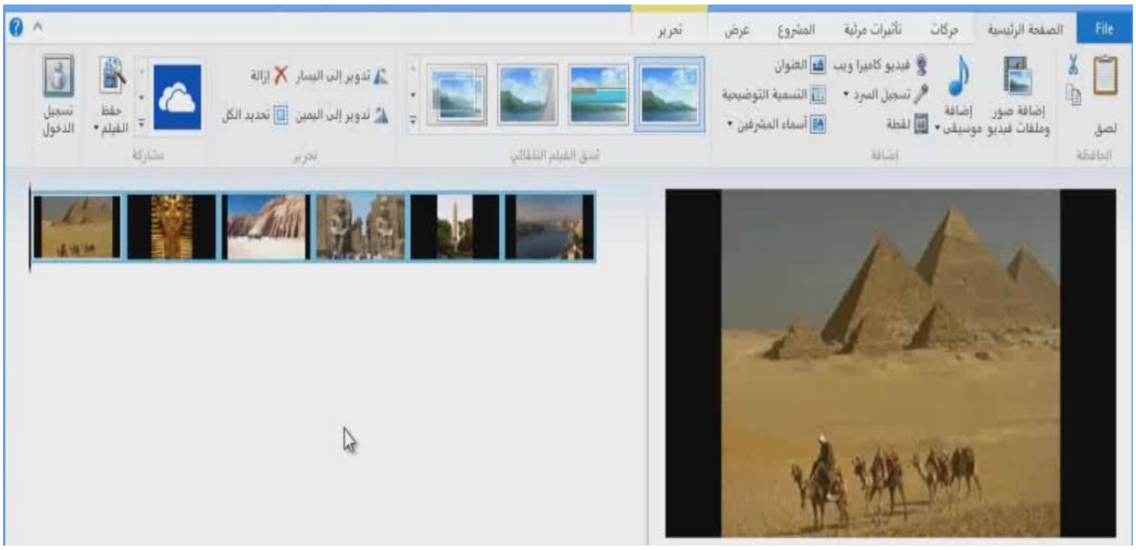
Create a video file about "the touristic attractions in Egypt".

To create a video file about "the touristic attractions in Egypt"; follow the next steps:

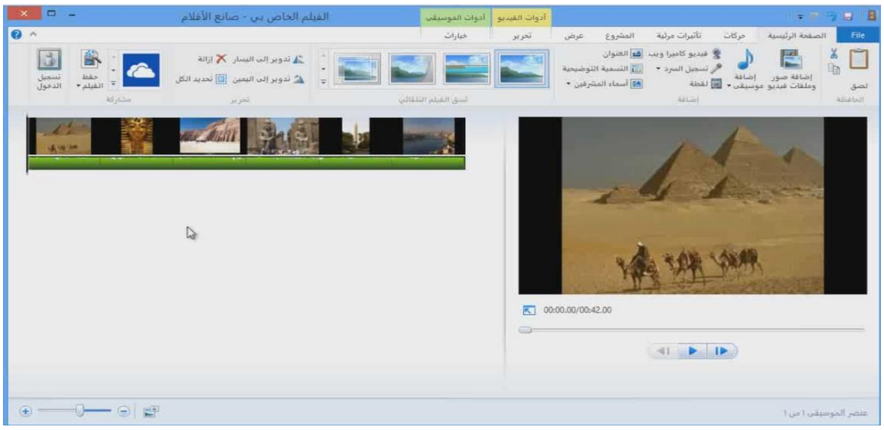
1. Import files (images, audio, video).
2. Modify video clips (adding effects, writing texts).
3. Save video clips within a file.

First: importing files

1. **Import images files:**
   Import image files for the most important “attractions in Egypt"from the sub folder *"Pictures"* under the main folder *"Atlas"*.



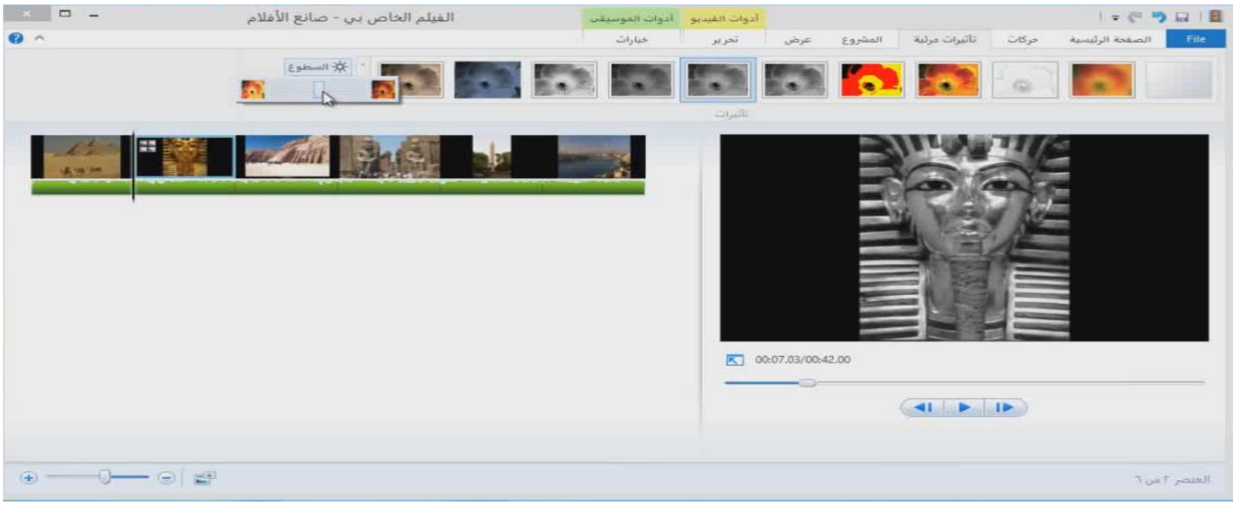
2. **Import the audio file:**
   Import the sound file of "attractions in Egypt" from the sub folder "Anthem" under the main folder "Atlas".



Notice the audio displayed in the *Time Line* below the images:

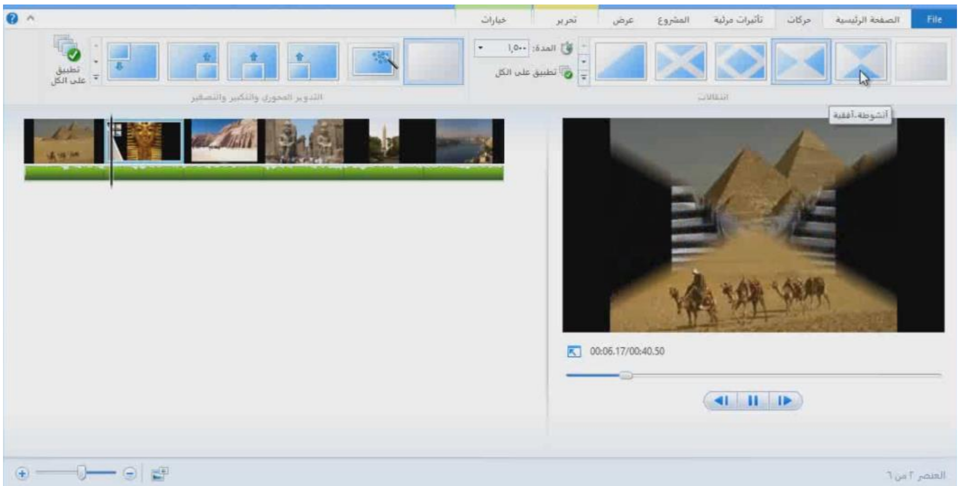
Second: Modify video clips (Add effects – writing texts).

1. **To set an effect on the image:**
   Choose an effect and put it over one of the images in the *Time Line*, and then preview the image after adding the affect.



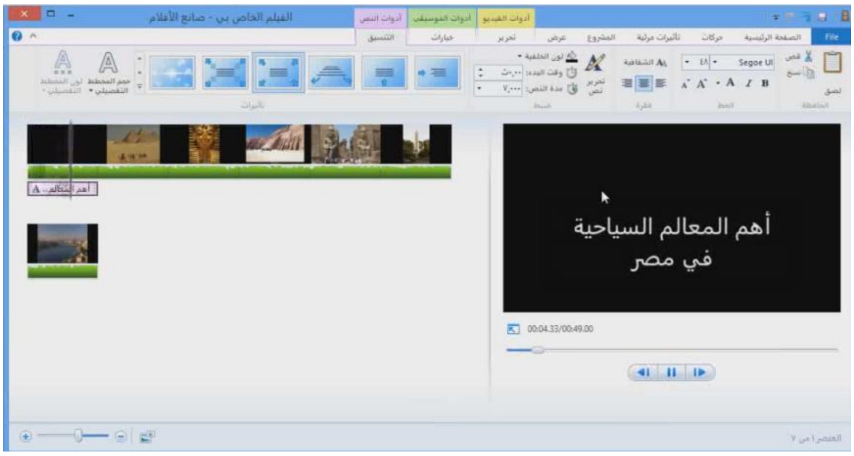
2- To set an effect on transitions between images clips:

Choose one of the effects and then place it between the video clips in the video *Time line*



3- To put Titles or Texts to different video clips:

Type the title of the video "Attractions in Egypt", this title appears in the *Time line* bar.



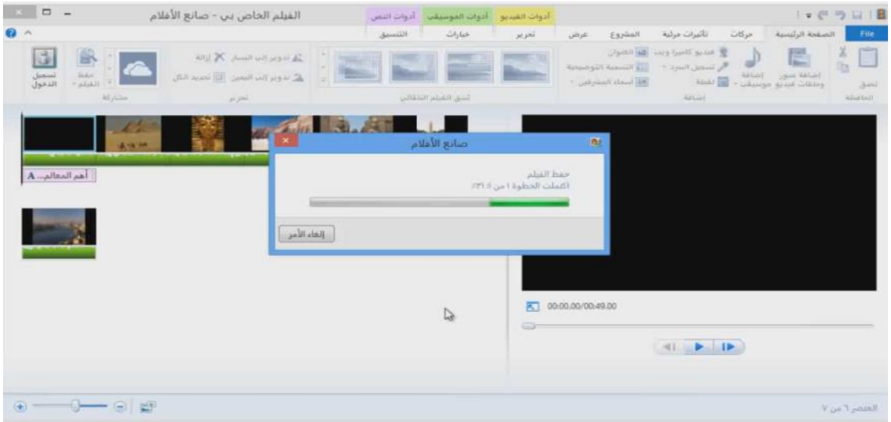
Third: Saving video clips in a file:

To save the video file on your computer:

-Locate the storage device.

-Save the file with the filename "مصر" in the sub folder *"Videos"* under the main folder *"Atlas"*.

-Follow the rest of the saving steps that ends with displaying the video.



Questions

First question

State whether the following statements are true (√) or false (×)

No	The statement	(✓)	(×)
(1)	Searching the Internet ; Video files can be obtained of formats: .wmf, .wmv ,.mp3	○	○
(2)	You can use MS Paint to modify sound files and video files.	○	○
(3)	File video .3gp is characterized by its high quality and small size.	○	○
(4)	You can use the Internet and mobile phones to collect videos files used for making projects	○	○

Second question : ***(Please refer to your teacher to check your answers)***

State four reasons for using Movie Maker Program:

*** .... * ....**

*** .... * ....**

Third question:

Choose the correct answer

1. The following are extensions of video files except the extension :

   a-. mp4 b-. png c-. png d-.3gp

2. The Highest quality of video file is:

   a-. Filename.3gp b-. Filename.mp4 c-. Filename.wmv

3. The smaller video file is:

   a Filename.mgp b-. -. Filename.3gp c-. Filename.mp4

Fourth question: ***(Please refer to your teacher to check your answers)***

Complete the table, specifying name/names of the applications that run each type of the following video files:

video file format	Name/Names of Applications used
.mp4	**..**
.wmv	**..**
.avi	**..**

Topic seven

Establish Project's interface and, set Project's properties

Learning Outcomes:

At the end of this course student will be able to:

(1) Identify the purpose of designing and creating a project.

(2) Design a user interface for the project.

(3) Specify the controls that you want to use in the user interface.

(4) Set the properties of the controls.

(5) Add a control to the Toolbox.



Folders have been created; containing subfolders and files required for the preparation of a project draft "*(Electronic Arabic Atlas)*"; folders were as follows:

- The main folder *"Atlas"* includes project's content of files and subfolders.
- A folder named *Database* stores an Excel file that saves countries data.
- A folder named *Flag* stores countries flags.
- A folder named *Maps* stores countries maps.
- A folder named *Anthem* stores national anthem for each country.
- A folder named *Videos* stores video files for touristic Attraction in Egypt.

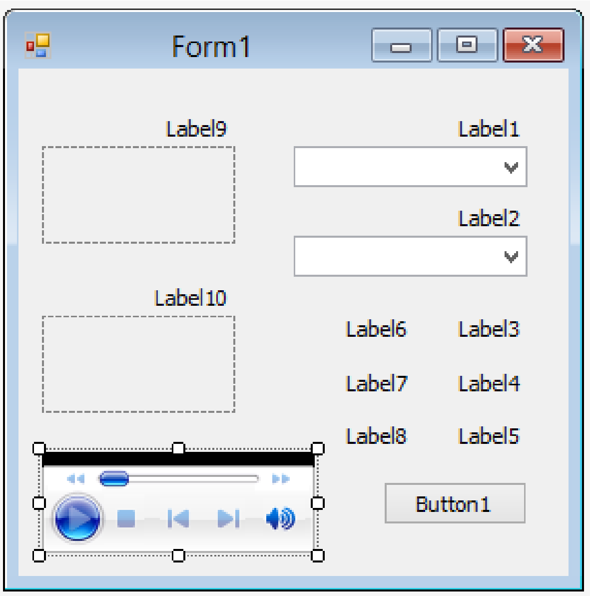
You have studied last year: "Programming using Visual Basic.Net language" that will help for producing "*(Electronic Arabic Atlas)*" program, you can use it to create and design project's interface.

Exercise

Create and design an interface for "*(Electronic Arabic Atlas)*" program

To create and design an interface; follow the next steps:

- Open Visual Studio. net available on your computer.
- Create a new project named "*(Electronic Arabic Atlas)*" program .
- Set the Controls, as shown in the shown figure:



What you notice:

On window form *Form1*; 10 Label controls and 2 ComboBox controls, 2 PictureBox controls and 1 Button control and 1 WindowsMediaPlayer are placed

- Adjust *Form1* window Properties and, set the Controls' properties displayed on the form; as shown in the following figure:



- Adjust the property *Name* of some of the *Controls* displayed on *Form1* window , as shown in the following table:

Name	Control
cmbbxContinent	**ComboBox1**
cmbbxState	**ComboBox2**
picbxMap	**PictureBox1**
picbxFlag	**PictureBox2**
lblDC	**Label6**
lblPorts	**Label7**
lblWR	**Label8**
btnStop_play	**Button1**
WMPlayer	**AxWindowsMediaPlayer1**

- Set the property Visible of the control WMPlayer to the value "False ".
- Set the property SizeMode of the two controls picFlag and picMap to the value "StretchImage".

Note

The control *AxWindowsMediaPlayer* does not exist in the (Toolbox); it will be combined to this (Toolbox) as described in the steps below:

With the help of your teacher do the following:

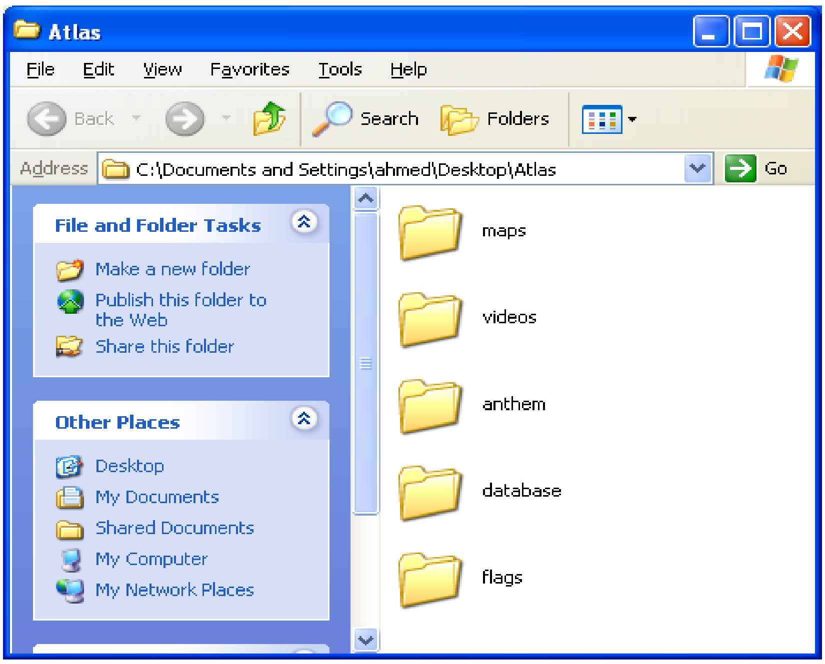
- Right Click using the mouse in the Toolbox and select (Choose Items).
- A dialog box appears displaying much tabulation.
- Select (com components) tabulation; then choose (Windows Media Player); and to close press (OK); this tool will be added to the (Toolbox).

Dear student; remember:

To Set up a project; you should:

(1) **Determine the purpose of the project**.

(2) **Collect and organize data for the project** ;the same thing you did to collect data for "(Electronic Arabic Atlas)", where you created folders as follows : (Data from each country — the Flag of each country – A Video for "Tourist Attractions in Egypt" – An Anthem for each country – the Map of each country ....).



(3) **Design the User Interface of the project GUI**.



(4) **Select the controls** that you want to use in the user interface (on the window form).

(5) **Set the properties of the controls**, such as:

Control	Name
ComboBox1	cmbbxContinent
ComboBox2	cmbbxState
PictureBox1	picbxMap
PictureBox2	picbxFlag
Label6	lblDC
Label7	lblPorts
Label8	lblWR
Button1	btnStop_play
AxWindowsMediaPlayer1	WMPlayer

(5.1) Notice that the name of the control reflects its content such as: cmbbxState where cmbbx indicates that the control is a ComboBox and State indicates that the control includes the name of the country.

(5-2) Specify the controls that appear on the User Interface (window form), using the code:

Object.Visible = True

And specify the other controls which does not appear on the User Interface (window form), using the code:

Object.Visible = False

(5-3) Adjust the SizeMode property of the PictureBox control, using the code:

Picbxmap.SizeMode = StretchImage

(6) **In VB.NET, you can add other controls to the available controls in the (Toolbox).**

Exercises

(1) The form window contains many Controls. Tick (✓) in front of the Controls shown below used on the form:



(2) The modification of controls names reflect its function ;from the following choose the best name for the control *PictureBox1* used to display the map of the country:



Questions

First question

State whether the following statements are true (√) or false (X)

No	The statement	(✓)	(✗)
1.	Elements can be placed inside the control (ComboBox) through the property "*Items* ".	○	○
2.	Use the control (ComboBox) to choose only one item from the list.	○	○
3.	Vbasic .net language allows adding new Controls to the (Toolbox) controls.	○	○
4.	You can use (Windows Media Player) program to run text files.	○	○
5.	The user can insert animated pictures using the control (PictureBox) ;thus it appears animated after the execution.	○	○

Second question:

Choose the correct answer

1. The result of a calculation can be displayed in the control *Label*, it is preferably that the value of the property Name is:
   a- Label1 b- Name c- lblResult d- MyName

2. The most suitable control that can be used to display a list of names are:
   a- Button b- PictureBox c- Label d- ComboBox

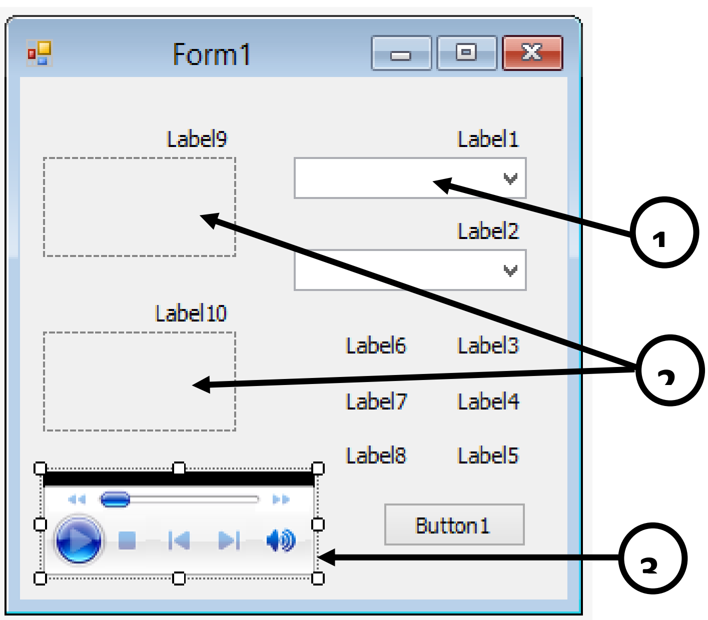
3. The following controls are used to display images except:
   a- ComboBox b- Label c- PictureBox d- Button

4. The control used to play sound and video files are:
   a- RadioButton b- WindowsMediaPlaye c-ComboBox d- PictureBox

5. The control used to display a list of items through it is:
   a- PictureBox b- ComboBox c- Button d- Label

Third question:

In the following figure, objects /controls are displayed on the showed (window form); write down in the table the exact number that designates the proper control.



Number	Indicates
(.....)	**The Control used to display pictures inside.**
(.....)	**The Control used to display sounds, and video files.**
(.....)	**The Control used to display a list of names through it**.

Topic eight

Reading data from an Excel sheet using Visual Basic.net

Learning outcomes:

At the end of the Topic students can:

(6) Explain what is meant by the following terms:

- **ADO**
- **Class.**
- **Object.**
- **Namespace.**
- **Framework.**
- **SQL**

(7) Write the code to open a communication channel.

(8) Declare the variables needed to open a communication channel.

(9) Write the code for loading an Excel file into memory.

(10) Assign data in Spreadsheet' columns located in the memory, to their corresponding controls on the user interface window.



Information

Dear Student…

While writing program code in Visual Studio.NET, you will use certain terms and apply the main concepts that you studied last year. Also you will learn some new terms that follows:

- **ADO (ActiveX Data Object):**

  It is an advanced technology that can be used to design "Controls" not as ordinary tools; but "Controls" that get access to databases over appropriate applications and develop applications and Programming Projects i.e (Windows Applications and Web Application) that manipulate data from a diversity of databases.

  Where; ADO.NET is a set of classes that provides access to multiple data sources; such as "Microsoft SQL Server, Microsoft Access, and Oracle ". These softwares can create/manipulate databases; ADO.NET is a part of the Framework.

- **Class:**

  A (Class) is the blueprint/ plan / template, from which the individual objects, are created. It is the blueprint that describes the details which any object takes (its Properties, Methods and, Events); and are derived from the (Class).

- **Object:**

  An Object is characterized by:

  1- The properties that describe and specify an Object.
  2- The events that occur on an Object.
  3- The methods or actions that an object can perform; upon the occurrence of a particular event.

An (Object) is the basic constructive element in Object Oriented Programming; it is created from a defined class. Thus an (Object) exists only after a certain (Class) has been created.

- **Namespace:**

  A Namespace contains a set of related classes that can be used when needed.

- **Framework:**

  Is the platform for Visual Studio. NET applications that :

  1- Enables developers to create applications like (Desktop applications , Web applications and Mobile applications).
  2- Provides a development environment for running all applications.

- **The Framework is composed of :**

  1- The execution engine (CLR) Common Language Runtime.
  2- The .NET class libraries (System Class Libraries).
  3- (Compilers).
  4- Other elements.

- **SQL (Structured Query Language) :**

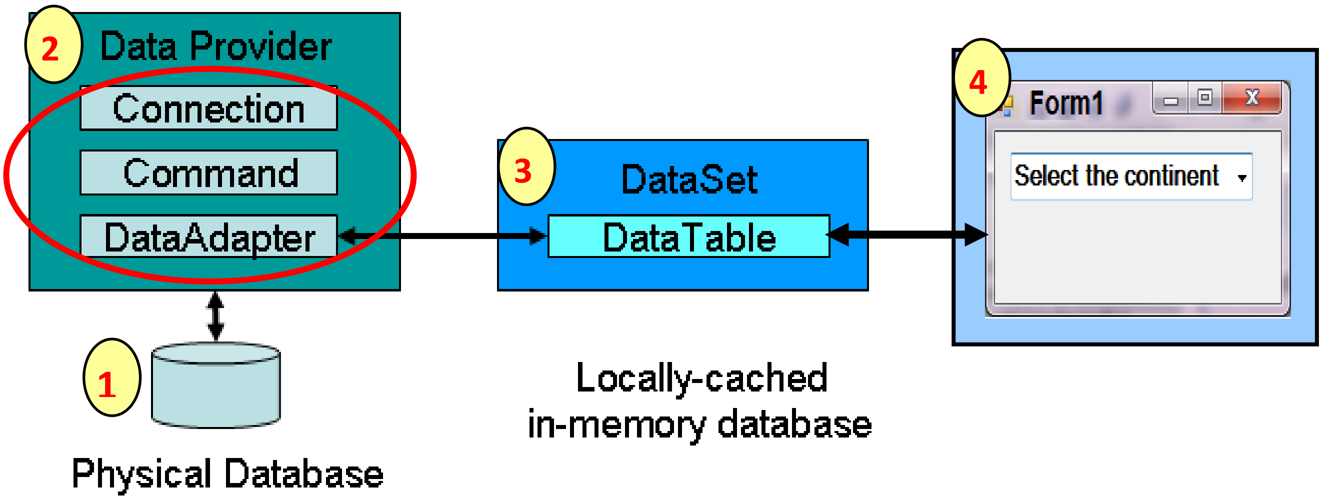
  It is a programming language designed for managing database files.

Other terms that can be used when dealing with databases, including:

Term	Definition
Select	**It is one of the SQL statements used to retrieve records from a table or from multiple tables in the database.**
DataSource	**The source of data (A file located in a storage media or a table stored in the memory**).

OleDb	**It is a Namespace that contains a set of Classes that can be used to manipulate databases that have been designed using Microsoft Office ; OleDb stands for (Object Linked & Embedded Database)**
Provider	**It is a link between the database and Visual basic. Each Database program has its own Data Provider (Connection, Command and, DataAdapter).**
OleDb.OleDbConnection	**It is a (Class) from where we can create a variable *"MyConnection* "out of this class; to open a communication channel with the worksheet that holds data; in *data file*.**
OleDbCommand	**It is a Class from where we can create a variable *"MyCommand*" out of this class; to execute a query and get data from *data file*.**
OleDb.OleDbDataAdapter	**It is a Class from where we can create a variable *"da*" out of this class; this variable works as a converter of data (Data Adapter) from the database to the *data table* for the variable *dt* located in the memory.**
MyConnection.ConnectionString	**It's a Property that contains the informtion required to open a communication channel like : FilePath , Data Source and, Provider .**
CommandText	**It is a Property for the variable *MyCommand* which contains a " String expression" representing a SQL syntax.**
DataSet	**It is a Class from where we can create a variable: *ds*. This variable in the computer's memory represents database tables (Data Tables), which was brought from the *data file* into memory.**
DataTable	**We can create a variable out of this class: *dt*. This variable in the computer's memory represents a table for saving data (Data Table), which was brought from the *data file*.**
da.Fill (dt)	**Where Fill is a way to fill the rows (records) in (DataTable) inside the memory.**

The following figures demonstrate the stages for retrieving data from a database saved in a storage medium, and converting it to a data table in the memory, and then display it in the appropriate object located on the interface window *Form* in Visual Basic.Net language.



<u>Examples of select statement</u>

If you have a spreadsheet as follows:

من مصادر المياه	من أهم الموانى	العاصمة	الدولة	القارة
وادى فجر – أبو جيدة	جدة	الرياض	السعودية	آسيا
وادى الباطن	الأحمدي	الكويت	الكويت	آسيا
وادى الخارد	عدن	صنعاء	اليمن	آسيا
تحليه الخليج العربى	الدوحة	الدوحة	قطر	آسيا
وادى العين – مسلم	مسقط	مسقط	عمان	آسيا
نهر النيل	الأسكندرية	القاهرة	مصر	أفريقيا
وادي زمزم – بى الكبير	بنغازى	طرابلس	ليبيا	أفريقيا
وادى مليان – مجرادة	صفاقس	تونس	تونس	أفريقيا
وادى تمانراست	وهران	الجزائر	الجزائر	أفريقيا
نهر الربيع – بوقراق	الدار البيضاء	الرباط	المغرب	أفريقيا

Example No 1:

Find the sum of the two numbers 8 and 10 using the Select statement.

Syntax: Select No1 + No2

Statement: Select 8 + 10

Output: 18

Example No 2:

Retrieve all records from a spreadsheet *Table1* using the Select statement.

Syntax: Select * from TableName

Statement: Select * from Table1

Example No 3:

Show the "Continent" column from the data table *Table1* using the Select Statement.

Syntax: Select FieldName from TableName

Statement: Select القارة from Table1

Output

القارة
آسيا
آسيا
آسيا
آسيا
آسيا
آفريقيا
آفريقيا
آفريقيا
آفريقيا
آفريقيا

Example No 4:

Show the"Continent" column from the data table *Table1* "without repetition using the Select Statement.

Syntax:

Select Distinct FieldName from TableName

Statement:

Select Distinct القارة from Table1

Output:

القارة
آسيا
أفريقيا

Example No 5:

Write the Select Statement required; displaying only the countries in " أسيا " continent from *Table1*.

Syntax:

Select FieldName from TableName Where Condition

Or:

Select [FieldName] from TableName Where Condition

Statement:

Select الدولة from Table1 Where القارة = 'أسيا'

Or:

Select [الدولة] from Table1 Where [القارة] = 'أسيا'

Output

الدولة
السعودية
الكويت
اليمن
قطر
عمان

Note: When using the **Where Condition** the value assigned to string constant is placed between quotations ' '.

Example No 6:

Write the Select Statement required; to retreive the column "من اهم الموانى" from the data table *Table1*.

Syntax

Select FieldName from TableName

Statement

Select [من أهم الموانى] from Table1

Output

من أهم الموانى
جدة
الأحمدي
عدن
الدوحة
مسقط
الأسكندرية
بنغازى
صفاقس
وهران
الدار البيضاء

Example No 7:

Write the Select Statement required; to retreive the two fields "الدولة" and "العاصمة" from the data table *Table1*.

Syntax

Select [FieldName1], [FieldName2] from TableName

Statement

Select [الدولة] , [العاصمة] from Table1

Output

الدولة	العاصمة
السعودية	الرياض
الكويت	الكويت
اليمن	صنعاء
قطر	الدوحة
عمان	مسقط
مصر	القاهرة
ليبيا	طرابلس
تونس	تونس
الجزائر	الجزائر
المغرب	الرباط

Example No 8:

Write the Select Statement required; to to get the number of countries from the data table *Table1*.

Syntax

Select Function (*) from TableName

Statement

Select Count (*) from Table1

Output: 10

Example No 9:

Write the Select Statement required; to get the number of countries in "أفريقيا " from the data table *Table1*.

Syntax

Select Function (FieldName) from TableName.

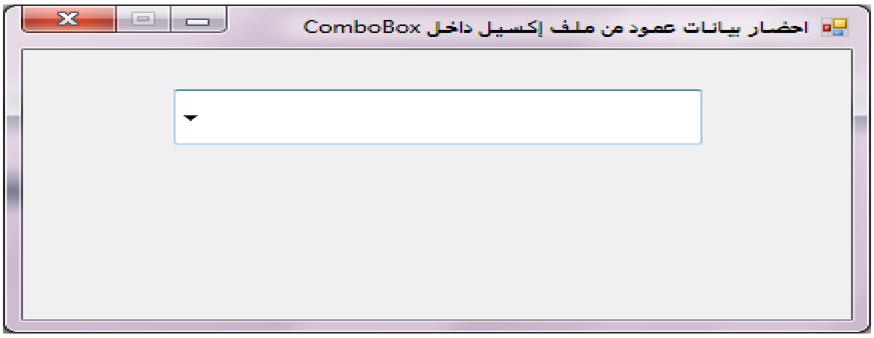
Statement

Select Count (الدولة) from Table1 Where القارة = 'أفريقيا'

Output: 5

Use VBasic.NET language to create a new project where the interface window "*Form*" contains one control (ComboBox1), and then write the necessary code to retrieve data (for example the "Continent" column) from the database : the Excel file" *AtlasData.xls* " ; this data will be displayed inside the control (ComboBox1).

.



Do the following steps

1-Create a new project.

2-Choose the control (ComboBox1) from the Toolbox and place it inside the *Form*

3-Go to the (Code Window) and then type the code as follows:

a) Declaration of objects or variables created from a group of classes to be used when manipulating the database file (*ExcelData.xls*)

```
(Form1 Events)                                  Load
Public Class Form1

    Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
        Dim MyConnection As New OleDb.OleDbConnection
        Dim MyCommand As New OleDb.OleDbCommand
        Dim da As New OleDb.OleDbDataAdapter
        Dim dt As New DataTable
    End Sub

End Class
```

Provider

b) And then we declare the two variables (filePath and sql) where the database file'name (ExcelData.xls) and the (Select) statement will be saved.

```
Public Class Form1

    Private Sub Form1_Load (ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
        Dim MyConnection As New OleDb.OleDbConnection
        Dim MyCommand As New OleDb.OleDbCommand
        Dim da As New OleDb.OleDbDataAdapter
        Dim dt As New DataTable

        Dim filePath, sql As String
    End Sub

End Class
```

c) Then customize the values of the variables:

- The value of the variable ***filePath*** is customized to the database file name (ExcelData.xls) located in the storage medium.
- The value of the variable ***sql*** is customized to the names of continents located in the worksheet *Sheet1* in the database file (ExcelData.xls).

```
Public Class Form1

    Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
        Dim MyConnection As New OleDb.OleDbConnection
        Dim MyCommand As New OleDb.OleDbCommand
        Dim da As New OleDb.OleDbDataAdapter
        Dim dt As New DataTable

        Dim filePath, sql As String

        filePath = "ExcelData.xls"
        sql = "Select القارة from [Sheet1$]"
    End Sub

End Class
```

- Assign the value used for the communication channel to the property (ConnectionString).
- Open the communication channel using the Method (Open).

```
Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
    Dim MyConnection As New OleDb.OleDbConnection
    Dim MyCommand As New OleDb.OleDbCommand
    Dim da As New OleDb.OleDbDataAdapter
    Dim dt As New DataTable

    Dim filePath, sql As String

    filePath = "ExcelData.xls"
    sql = "Select القارة from [Sheet1$]"

    MyConnection.ConnectionString= "Provider=Microsoft.Jet.OLEDB.4.0; data source=" & filePath & ";Extended Properties=Excel 8.0
    MyConnection.Open()
End Sub
```

- Assign the value used for the command of the communication channel to the property (Connection).
- Assign the value used for the command with the *Select* statement through the property (CommandText).

```
Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
    Dim MyConnection As New OleDb.OleDbConnection
    Dim MyCommand As New OleDb.OleDbCommand
    Dim da As New OleDb.OleDbDataAdapter
    Dim dt As New DataTable

    Dim filePath, sql As String

    filePath = "ExcelData.xls"
    sql = "Select القارة from [Sheet1$]"

    MyConnection.ConnectionString= "Provider=Microsoft.Jet.OLEDB.4.0; data source=" & filePath & ";Extended Properties=Excel 8.0
    MyConnection.Open()

    MyCommand.Connection = MyConnection
    MyCommand.CommandText = sql
End Sub
```

- Assign the value used for the variable *da* through the property (SelectCommand).
- Use the variable *da* for the property (Fill) to fill in the spreadsheet *dt*.

```
Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
    Dim MyConnection As New OleDb.OleDbConnection
    Dim MyCommand As New OleDb.OleDbCommand
    Dim da As New OleDb.OleDbDataAdapter
    Dim dt As New DataTable

    Dim filePath, sql As String

    filePath = "ExcelData.xls"
    sql = "Select القارة from [Sheet1$]"

    MyConnection.ConnectionString= "Provider=Microsoft.Jet.OLEDB.4.0; data source=" & filePath & ";Extended Properties=Excel 8.0
    MyConnection.Open()

    MyCommand.Connection = MyConnection
    MyCommand.CommandText = sql

    da.SelectCommand = MyCommand
    da.Fill(dt)
End Sub
```

- Customize the data source used to fill the control (ComboBox1) with data.
- Fill in the control (ComboBox1) from the the first column of the *Data Table.*

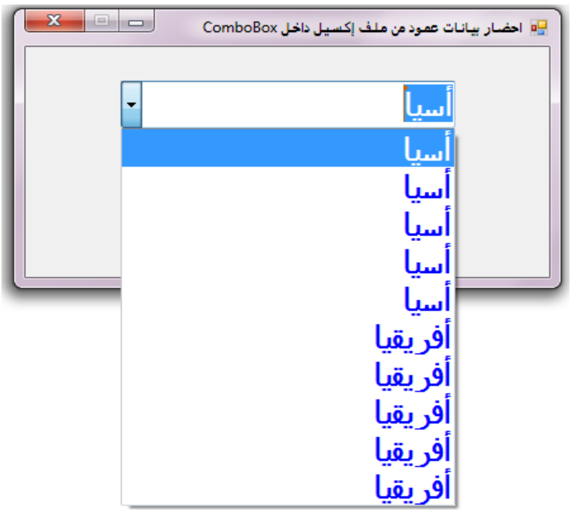
```
Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
    Dim MyConnection As New OleDb.OleDbConnection
    Dim MyCommand As New OleDb.OleDbCommand
    Dim da As New OleDb.OleDbDataAdapter
    Dim dt As New DataTable
    Dim filePath, sql As String

    filePath = "ExcelData.xls"
    sql = "Select القارة from [Sheet1$]"
    MyConnection.ConnectionString= "Provider=Microsoft.Jet.OLEDB.4.0; data source=" & filePath & ";Extended Properties=Excel 8.0
    MyConnection.Open()
    MyCommand.Connection = MyConnection
    MyCommand.CommandText = sql
    da.SelectCommand = MyCommand
    da.Fill(dt)

    Me.ComboBox1.DataSource = dt
    Me.ComboBox1.DisplayMember = dt.Columns(0).ToString
End Sub
```

- After writing the code and choosing " Run" ,
- Click on the control (ComboBox1); *what you notice*?

All continents in the first column of the Data Table will be displayed as shown:



How we avoid the repetition of continents' names ?

We modify the code: by replacing the line:

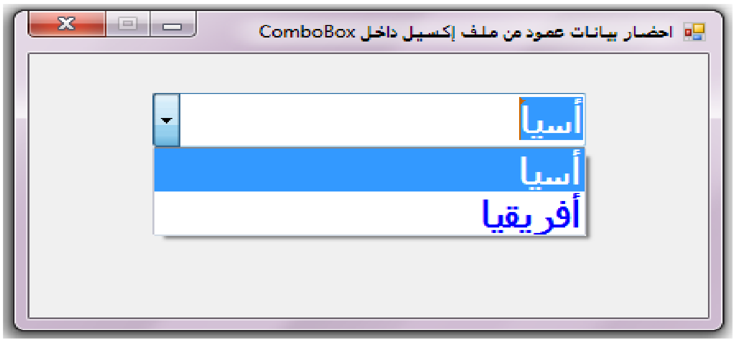
sql = "Select القارة from [Sheet1$]"

With the line:

sql = "Select distinct القارة from [Sheet1$]"

- After choosing "Run ".
- Click on the control (ComboBox1); *what you notice*?

All continents in the first column of the Data Table will be displayed without repeatetion as shown:



Dear student……

After setting up the program's interface and adjusting its characteristics and the properties of the “Controls” used, comes the stage of writing the appropriate code until you encountered the program's interface to respond to the needs of *Atlas* user.

<u>Write the appropriate code</u>

Since the program'data is available in the Excel file that contains the following data as shown:

E	D	C	B	A	
من مصادر المياه	من أهم الموانئ	العاصمة	الدولة	القارة	1
وادي فجر - أبو جيدة	جدة	الرياض	السعودية	أسيا	2
وادي الباطن	الأحمدي	الكويت	الكويت	أسيا	3
وادي الخارد	عدن	صنعاء	اليمن	أسيا	4
تحليه الخليج العربي	الدوحة	الدوحة	قطر	أسيا	5
وادي الجين - مسلم	مسقط	مسقط	عمان	أسيا	6
نهر النيل	الأسكندرية	القاهرة	مصر	أفريقيا	7
وادي زمزم - بي الكبير	بنغازى	طرابلس	ليبيا	أفريقيا	8
وادي مليان - مجرادة	صفاقس	تونس	تونس	أفريقيا	9
وادي تمانراست	وهران	الجزائر	الجزائر	أفريقيا	10
نهر الربيع - بورقراق	الدار البيضاء	الرباط	المغرب	أفريقيا	11

So,we need to open a channel of communication between the ***"Electronic Arabic Atlas*** " Program and the Excel file, this is done by using ***Classes*** under the **ADO.NET** that enable us to read the data stored on the file and display it on the program's interface and manipulate it through the following steps:

- **Open the code window for the window interface *Form1*, and then declare the function *GetDatafromExcelSheet* as shown in the following CODE**:

```
Function GetDatafromExcelSheet(FilePath As String, sql As String) As DataTable

End Function
```

How many operands are assigned to this function?

This function has 2 operands:

- "*FilePath*" that reprsents a path Excel file.
- "*Sql*" that represents a sentence through which we will inquire about the data from the *Excel file*.

This function returns a value of type *DataTable* inside the computer memory; that represents the data brought from Excel file.

- **Declare the following variables:**
  - The Variable "**MyConnection**" that allows opening a channel of communication in the worksheet that holds data in an Excel file.
  - The Variable "**MyCommand**" will perform a `query by which you can get the data from an Excel file.
  - The Variable "**da**" will transfer data from an Excel file to the data Table of Variable "dt".
  - The Variable "**dt**" has a table for saving the data brought from the Excel file.

- **Use variables as shown in the following Code:**

```
Function GetDatafromExcelSheet(FilePath As String, sql As String) As DataTable
    Dim MyConnection As New OleDb.OleDbConnection
    Dim MyCommand As New OleDb.OleDbCommand
    Dim da As New OleDb.OleDbDataAdapter
    Dim dt As New DataTable

    MyConnection.ConnectionString = "provider=Microsoft.Jet.OLEDB.4.0; " & _
      "data source=" & FilePath & "; " & _
      "Extended Properties=Excel 8.0"

    MyCommand.Connection = MyConnection
    MyCommand.CommandText = sql

    da.SelectCommand = MyCommand
    da.Fill(dt)

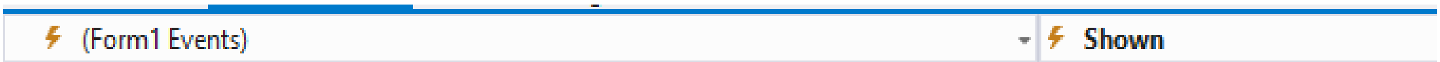
    Return dt

End Function
```

- The data adapter “da” uses the command “MyCommand” which has a sql query statement to retrieve the required data from Excel file and use the communication channel “MyConnection” a way to convert data to “dt.”
- Then the function returns the “dt” with data from Excel file.

▪ **Use the Function “GetDatafromExcelSheet” to fill in the list of continents with its names**

- Open the code window.
- From the list of **Class Names** Select (*Form1 Events*).
- From the list Method **Names** choose the event (*Shown*)**;** *we choose the event “Shown” because it happens once at the window appearance for the first time.*



Then write the following code:

```
Private Sub Form1_Shown(sender As Object, e As EventArgs) Handles Me.Shown
    Dim dt As New DataTable
    dt = GetDatafromExcelSheet("c:\Atlas\database\atlas.xls", _
                               "select distinct القارة from [data$]")
    Me.cmbbxContinent.DataSource = dt
    Me.cmbbxContinent.DisplayMember = dt.Columns(0).ToString
    Me.cmbbxContinent.ValueMember = dt.Columns(0).ToString
    Me.cmbbxContinent.SelectedIndex = 1
End Sub
```

In the previous code:

- We declared the ***dt*** variable of type DataTable,

- We customized the return value of the function ***GetDatafromExcelSheet*** to this variable; after we gave the database file path and query statement through which the names of the continents will be obtained.
- We adjusted some of the properties of the control ***cmbbxContinent.***
- We customized "***dt***" that contains the data table from Excel file to the property "DataSource"
- We customized the first column (first field) of data table "***dt***" for the property "*DisplayMember*" to display the contents of this column in the control "*cmbbxContinent*" where Column (0) means the first column.

We can show the difference between the two properties: "*DisplayMember*" and "*ValueMember*" for the control "*ComboBox*" as follows:

Example:

ComboBox control maintains two values: one of them is a shown value that is kept inside *DisplayMember* property and the other vaue is not shown; it's kept inside *ValueMember* property as shown in the example below:

- Supposed there is a data table with two fields ("Student Name" and "National ID") and it is required to display "Student Name" in the *ComboBox*.On selecting a Student's name from the list, his National ID appears in the Label control.
- To accomplish the above, We allocate "StudentName" field for the property "DisplayMember" and customize " National ID" field for the property "ValueMember".
- Then cutomize “ValueMember” for the property *Text* of the control “**Label**” in the *SelectedIndexChanged* event related to the ComboBox.
- Then cutomize a Value =1 for the property “*SelectedIndex*” So that the event handler *cmbbxContinent_SelectedIndexChanged* is called.

When we run the program, we find names of continents in the list as shown below:



Questions

Question No 1:

Put (✓) or (x) in front of each of the following Statement:

No	Statement	(✓)	(✗)
1-	We open channel of communication between the programme that is created in Visual basic Dot Net language and Excel file by using ADO.NET tools.		
2-	Variable of type (OleDbConnection) is used in closing the communication channel that has been opened.		
3-	The return value from the function : “GetDatafromExcelSheet (FilePath As String, sql As String) As DataTable” is of type String.		
4-	The announcement of a *Function* is done by using the word "Sub".		
5-	You can use a variable of type (OleDbCommand) for the purpose of opening a channel of communication data file.		
6-	You can create a variable of type (DataTable) in-memory ; in which we store data that were brought from the data file.		

Question No 2: *Please refer to your teacher to check your answers*

Read the following code, and then answer the following:

```
Function GetDatafromExcelSheet(FilePath As String, sql As String) As DataTable
    Dim MyConnection As New OleDb.OleDbConnection
    Dim MyCommand As New OleDb.OleDbCommand
    Dim da As New OleDb.OleDbDataAdapter
    Dim dt As New DataTable

    MyConnection.ConnectionString = "provider=Microsoft.Jet.OLEDB.4.0; " & _
      "data source=" & FilePath & "; " & _
      "Extended Properties=Excel 8.0"

    MyCommand.Connection = MyConnection
    MyCommand.CommandText = sql

    da.SelectCommand = MyCommand
    da.Fill(dt)

    Return dt

End Function
```

1- We declared a function named:......................................

2- This function has two kinds of operands :................... and sql where ……… represents a path Excel file and................ represents the sentence from which we will inquire about the data from excel file.

3-This function will return with a value of the type .... :which is a Data Table in computer memory holding data that has been imported from Excel file.

4-We have declared the following variables:

- **The variable .... to open a channel of communication on a worksheet holding data from an Excel file.**
- **The variable .... that executes a query to get data from Excel file.**
- **The variable .... will act as an adapter for data from Excel file.**
- **The variable .... has a table in which we save data that have been brought from the Excel file.**

5-Then the data adapter "*da*" uses the command .... which has the Query syntax *sql* about the required data from Excel file that used the Communication channel "*MyConnection* " as a way to convert data to " *dt* ".

Topic nine

Writing the Project Code

Learning outcomes:

At the end of the Topic students can:

1. **Write the code required to retrieve data from an Excel sheet,**
2. **Write the code required to display data through their corresponding controls on the user interface window.**



To write the (***Electronic Arabic Atlas***) Program code:

- Double click the "Continents" *Combobox* that opens in the design mode, and then the event handler appears as follows:

```
Private Sub cmbbxContinent_SelectedIndexChanged(send

End Sub
```

- Write the following code to display a list of country 'names of the Continent in the cmbbxState list, as shown in this code:

```
Private Sub cmbbxContinent_SelectedIndexChanged(sender As Object, e As EventArgs) Han
    Try
        Dim dt As New DataTable
        dt = GetDatafromExcelSheet("c:\Atlas\database\atlas.xls", _
                                   "select الدولة from [data$] where القارة= '" _
                                   & Me.cmbbxContinent.SelectedValue & "' ")

        Me.cmbbxState.DataSource = dt
        Me.cmbbxState.DisplayMember = dt.Columns(0).ToString
        Me.cmbbxState.ValueMember = dt.Columns(0).ToString

        Me.cmbbxState.SelectedIndex = 3
        Me.cmbbxState.SelectedIndex = 0

    Catch ex As Exception

    End Try
End Sub
```

In the previous code, you notice the following:

- The statement 'Try/Catch' was used to prevent errors; while running the program, the errors might result from calling the event c*mbbxContinent_SelectedIndexChanged* before the fill in of the list of continents' names.

- The following two lines of code were used to call the Event *cmbbxState_SelectedIndexChanged* to show Egypt's own data :

```
Me.cmbbxState.SelectedIndex = 3
Me.cmbbxState.SelectedIndex = 0
```

When you run the program, you find a list of countries as shown in the following figure:



- Double click "Countries" *Combobox* that opens in the design mode, and then the event handler appears as follows.

```
Private Sub cmbbxState_SelectedIndexChanged(sender As Ob

End Sub
```

- Write the necessary code that shows the selected "Country" data as illustrated in the following figure:

```
Private Sub cmbbxState_SelectedIndexChanged(sender As Object, e As EventArgs) Han
    Try
        Dim dt As New DataTable
        dt = GetDatafromExcelSheet("c:\Atlas\database\atlas.xls", _
                                   "select * from [data$] where الدولة= '" & _
                                   Me.cmbbxState.SelectedValue & "'")
        Me.lblDC.Text = dt.Rows(0).Item(2).ToString
        Me.lblPorts.Text = dt.Rows(0).Item(3).ToString
        Me.lblWR.Text = dt.Rows(0).Item(4).ToString
    Catch ex As Exception
    End Try
End Sub
```

<u>In the previous code,</u>

Rows refer to rows and Items refer to coloumns in the Excel sheet. The rows and columns numbers start with (0); row (o) refers to first row, and item (2) refers to the third column.

Dear student,

Remember the following:

1. On choosing a Continent, the names of its related Countries will be displayed.
2. On choosing a Country, its related data appear in the controls displayed on the user interface window.
3. A value is assigned to each element of the variable " *dt* "(Data table) for each field corresponding to the displayed Control ;on the user interface window.
4. The statement (Try/ Catch) is used with the code to prevent the occurance of errors during running the program.

After running the program, the user interface window appears as follows:



Exercises

Choose the correct answers

First: The purpose of the following code :

Read the following code, and then choose the correct answer

```
    Private Sub cmbbxContinent_SelectedIndexChanged(sender As Object, e As EventArgs) Handles
cmbbxContinent.SelectedIndexChanged
        Try
            Dim dt As New DataTable
            dt = GetDatafromExcelSheet("c:\Atlas\database\atlas.xls", _
                                    "select الدولة from [data$] where القارة= '" _
                                                    & Me.cmbbxContinent.SelectedValue & "' ")
```

No	Statement	(✓)	(✗)
1-	The Excel Data Table is set in the variable **cmbbxContinent**		
2-	The Excel Data Table is saved in the following Path: **" c:\Atlas\database\atlas.xls".**		
3-	The Excel Data Table is set in the variable " ***dt*** "		

Second : The purpose of the following code :

Read the following code, and then choose the correct answer

Me.lblPorts.Text =
dt.Rows (0).Item(3).ToString

```
Private Sub cmbbxState_SelectedIndexChanged(sender As Object, e As EventArgs) Handles
cmbbxState.SelectedIndexChanged
        Try
            Dim dt As New DataTable
            dt = GetDatafromExcelSheet("c:\Atlas\database\atlas.xls", _
                                       "select * from [data$] where الدولة= '" & _
                                       Me.cmbbxState.SelectedValue & "'")
            Me.lblDC.Text = dt.Rows(0).Item(2).ToString
            Me.lblPorts.Text = dt.Rows(0).Item(3).ToString
            Me.lblWR.Text = dt.Rows(0).Item(4).ToString

        Catch ex As Exception
        End Try
                                                                              End Sub
```

No	Statement	(✓)	(✗)
1-	The property *Text* for the control *lblPorts* has assigned the value of data located in the Row (3) and the column (0) in the table " dt".		
2-	The property *Text* for the control *lblPorts* has assigned the value of data located in the Row (0) and the column (3) in the table " dt".		
3-	The property *lblPorts* for the control *Text* has assigned the value of data located in the Row (0) and the column (3) in the table " dt".		

Topic ten

Adding the country flag and its map in (Electronic Arabic Atlas) program

Learning outcomes:

At the end of the Topic students can:

1-Write the code for displaying images through the user interface controls.

2- Prevent possible errors while running the program.

3- Show off the image file types inside the folder.

4-Identify the path where image files will be saved.



Dear student,

In this Topic we will complete writing the project code related to the pictures of ***Electronic Arabic Atlas*** program.

- Set the names of the image files (Flags and Maps) with the same names displayed in the list of country'names.
  - Some file names of country' flags in the **Flags** folder:
    - **مصر.png**
    - **تونس.png**
    - **السعودية.png**
  - Some file names of country' maps in the **Maps** folder:
    - **مصر.png**
    - **تونس.png**
    - **السعودية.png**

Notice:

The similarity in the names of the image files in the two folders **Flags** and **Maps** to simply deduce their names when assigning these images for both controls (**picbxFlag**, **picbxMap**) as written in the Excel sheet.

- Write the following code in the event handler ***cmbbxState_SelectedIndexChanged*** to display the country flag and its map as shown in the following code:

```
Private Sub cmbbxState_SelectedIndexChanged(sender As Object, e As EventArgs) Hand
    Try
        Dim dt As New DataTable
        dt = GetDatafromExcelSheet("c:\Atlas\database\atlas.xls", _
                                   "select * from [data$] where الدولة= '" & _
                                   Me.cmbbxState.SelectedValue & "'")
        Me.lblDC.Text = dt.Rows(0).Item(2).ToString
        Me.lblPorts.Text = dt.Rows(0).Item(3).ToString
        Me.lblWR.Text = dt.Rows(0).Item(4).ToString

        Dim picName As String = dt.Rows(0).Item(1).ToString & ".png"
        Me.picbxFlag.Image = Image.FromFile("c:\Atlas\flags\" & picName)
        Me.picbxMap.Image = Image.FromFile("c:\Atlas\maps\" & picName)

    Catch ex As Exception
    End Try
End Sub
```

While running the program, the flag and map of the selected country are displayed as shown in the following:



Remember dear student

1. Make sure of naming each file with a name suitable to its content
2. Illustrate different file types used in the project (Map –flag -National Anthem – video clip of touristic attractions.......).
3. Identify the path used for saving files.
4. Use Try/catch statement within the code to detect errors that may occur during program's execution and, to display an appropriate message for this error.

The user interface window will appear after the execution as follows



1. Setup a project of name (VB_Multimedia_Pictures1K) to insert pictures into the control (*PictureBox*) from another control (*PictureBox*) or from a file using the (*InputBox*) so that the User Interface Window appears as follows:



Programming Code

```
' --------------------- Insert a Picture from a PictureBox or from a File to another PictureBox ---------------------

Public Class Form1
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
        PictureBox3.Image = PictureBox1.Image
    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button2.Click
        PictureBox3.Image = PictureBox2.Image
    End Sub

    Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button3.Click
        Dim P As String
        P = InputBox("Enter a Filename:")
        PictureBox3.Image = Image.FromFile(P)
    End Sub
End Class
```

Notice: The command used for inserting an image file to the control (*PictureBox3*) is:

PictureBox3.Image = Image.FromFile ("PictureFilename.ext").

2. Setup a project called (*VB_Multimedia_Pictures2K*) to insert pictures into the control (*PictureBox*) from another control (*PictureBox*) or from a file using the (*ComboBox*) control so that the User Interface Window appears as follows:



Programming Code

```
' --------------------- Insert a Picture from a PictureBox or from a File to another PictureBox ---------------------

Public Class Form1
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
        PictureBox3.Image = PictureBox1.Image
    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button2.Click
        PictureBox3.Image = PictureBox2.Image
    End Sub

    Private Sub ComboBox1_SelectedIndexChanged(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles ComboBox1
        Dim P As String
        P = ComboBox1.SelectedItem
        Try
            PictureBox3.Image = Image.FromFile(P)
        Catch ex As Exception
            MsgBox("The file " & P & " is not fond")
        End Try
    End Sub
End Class
```

Notice: We used the control "ComboBox1" that preserve the names of image files saved in the storage media.

Exercises

1. **Read the following code, and then choose the correct answer**

```
Dim picName As String = dt.Rows(0).Item(1).ToString & ".png"
Me.picFlag.Image = Image.FromFile("c:\Atlas\flags\" & picName)
Me.picMap.Image = Image.FromFile("c:\Atlas\maps\" & picName)
```

The value assigned to the variable PicName is:

No	Statement	(✓)	(✗)
1-	The content of Row (0) and the column (1) in the table " dt"; plus the file extension **.png.**		
2-	The content of the Row (1) and the column (0) in the table " dt"; plus the file extension **.png**.		
3-	The content of Row (0) and the column (1) in the table " dt"; plus the file extension **ToString**.		

2. **Read the following code, and then choose the correct answer.**

```
Me.picFlag.Image =
Image.FromFile("c:\Atlas\flags\" & picName)
```

The code is used to assign a picture file to the property:

No	Statement	(✓)	(✗)
1-	Image for the control **PicFlag**		
2-	FromFile for the control **PicFlag**		
3-	Image for the control **FromFile**		

Topic eleven

Adding the national anthem sound file to (Electronic Arabic Atlas) program

Learning outcomes:

At the end of the Topic students can:

1. **Write the program code to play or stop a sound file; when pressing the command button**
2. **Declare variables and specify their location; on the level of class, or procedure.**
3. **Show the audio file types inside the folder.**
4. **Specify the path where sound files are saved**

Adjust audio file names of countries' national anthem; with the same names shown in the list of countries names.

- Some audio file names of countries' national anthem saved in the "*Anthem*" folder

  مصر.mp3

  تونس.mp3

  السعودية.mp3

- Type the following code in the "cmbbxState_SelectedIndexChanged" event handler to run the national Anthem of the country as shown in the following code:

```
Dim anthemMp3 As String
Private Sub cmbbxState_SelectedIndexChanged(sender As Object, e As EventArgs) Hand
    Try
        Dim dt As New DataTable
        dt = GetDatafromExcelSheet("c:\Atlas\database\atlas.xls", _
                                   "select * from [data$] where الدولة= '" & _
                                   Me.cmbbxState.SelectedValue & "'")
        Me.lblDC.Text = dt.Rows(0).Item(2).ToString
        Me.lblPorts.Text = dt.Rows(0).Item(3).ToString
        Me.lblWR.Text = dt.Rows(0).Item(4).ToString

        Dim picName As String = dt.Rows(0).Item(1).ToString & ".png"
        Me.picbxFlag.Image = Image.FromFile("c:\Atlas\flags\" & picName)
        Me.picbxMap.Image = Image.FromFile("c:\Atlas\maps\" & picName)


        anthemMp3 = "c:\Atlas\anthem\" & dt.Rows(0).Item(1).ToString & ".mp3"
        Me.WMPlayer.URL = anthemMp3
        Me.btnStop_play.Text = "إيقاف تشغيل السلام الوطني"
    Catch ex As Exception
    End Try
End Sub
```

Notice: A variable named *anthemMp3* was declared to the level of class, to save the path and the name of the sound file; so it can be used in more than one event handler

- **To control the start or stop of a sound national Anthem file; type the code in the " *btnStop_play_Click* "event handler of the button "btnStop_Play" as shown in the following code:**

```
Private Sub btnStop_play_Click(sender As Object, e As EventArgs) Handles btnStop_play.Click
    If Me.btnStop_play.Text = "إيقاف تشغيل السلام الوطني" Then
        Me.WMPlayer.close()
        Me.btnStop_play.Text = "تشغيل السلام الوطني"
    Else
        Me.WMPlayer.URL = anthemMp3
        Me.btnStop_play.Text = "إيقاف تشغيل السلام الوطني"
    End If
End Sub
```

Remember dear student

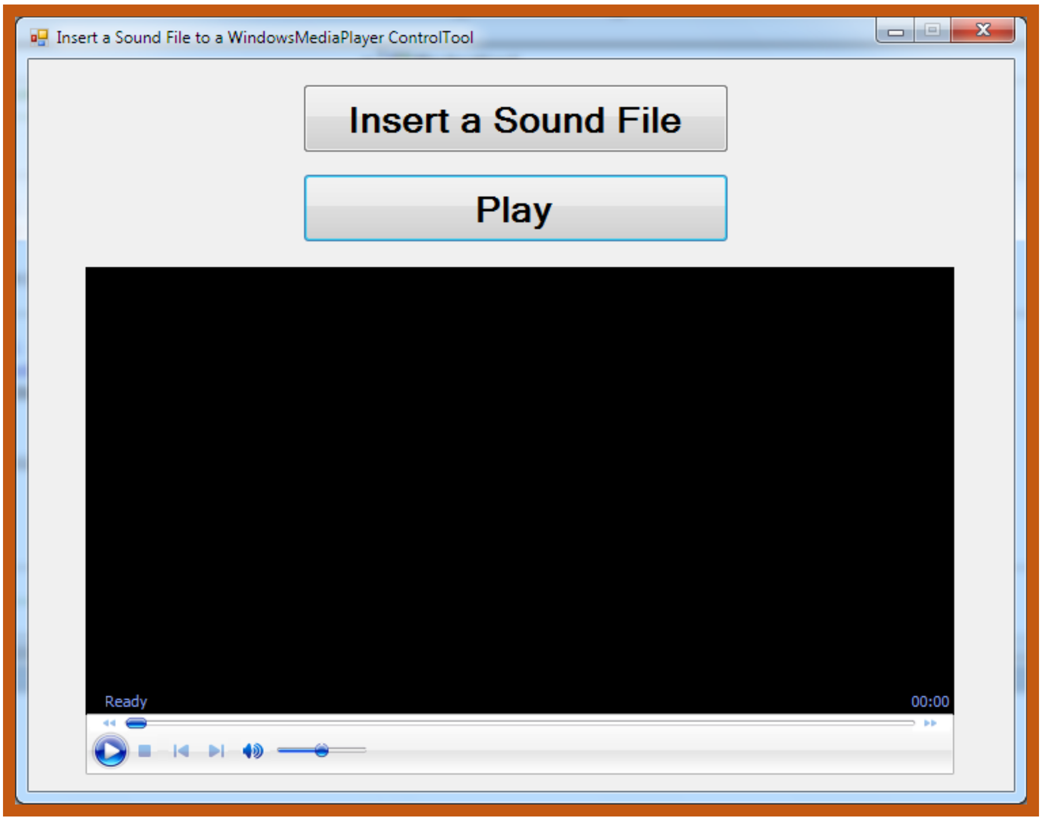
1. Make sure of naming the audio files for the national anthem of each country.
2. Show the national anthem file types.

The user interface window will appear after the execution as follows



Exercises

1- Set up a project with name (VB_Multimedia_Sound1K) so that you can insert a sound file to the tool (AxWindowsMediaPlayer), and play it using an input box (InputBox) on the form as follows:



<u>Code</u>

:

```
' ------------------------------ Insert a Sound File to a WindowsMediaPlayer ControlTool ----------------------------

Public Class Form1
    Dim V As String

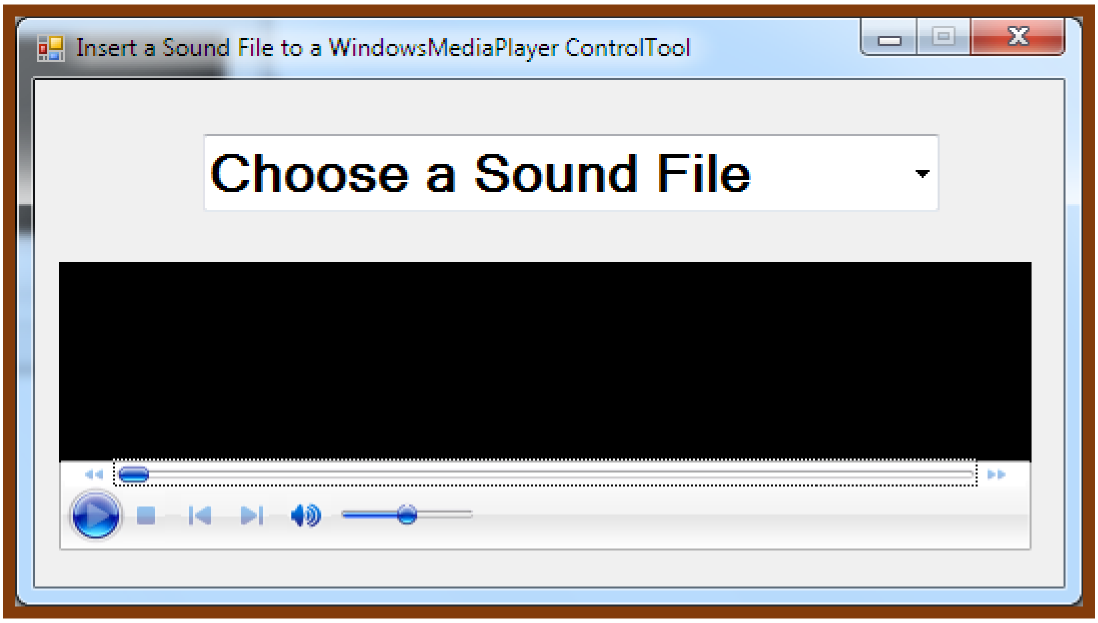
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
        V = InputBox("Enter a Sound Filename:")
        Button2.Text = "Play"
        AxWindowsMediaPlayer1.close()
    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button2.Click
        If Button2.Text = "Play" And V <> "" Then
            AxWindowsMediaPlayer1.URL = V
            Button2.Text = "Stop"
        Else
            AxWindowsMediaPlayer1.close()
            Button2.Text = "Play"
        End If
    End Sub
End Class
```

Notice

Insert a sound file into the (AxWindowsMediaPlayer) tool by typing the desired file name in the input box (InputBox) that will be executed later.

2- Set up a project with name (VB_Multimedia_Sound2K) to insert a sound file into the control (AxWindowsMediaPlayer) using the control (ComboBox), as illustrated on the form:



<u>Program code</u>

```
' Insert a Sound File to a WindowsMediaPlayer ControlTool
Public Class Form1
   Private Sub ComboBox1_SelectedIndexChanged(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles ComboBox1.SelectedIndexChanged
        Dim V As String
        V = ComboBox1.SelectedItem
        AxWindowsMediaPlayer1.URL = V
   End Sub
End Class
```

Notice

The control *ComboBox* is used to display audio files'names saved on the storage medium to be executed later.

Exercises

3. **Read the following code, and then choose the correct answer**

```
anthemMp3 = "c:\Atlas\anthem\" & dt.Rows(0).Item(1).ToString & ".mp3"
Me.WMPlayer.URL = anthemMp3
Me.btnStop_play.Text = "إيقاف تشغيل السلام الوطني"
```

The URL is used for:

No	Statement	(✓)	(✗)
1-	To stop playing the sound file for the control WMPlayer		
2-	To play the sound file for the control WMPlayer		
3-	To record the sound file for the control WMPlayer		

4. **Read the following code, and then choose the correct answer**

```
Private Sub btnStop_play_Click(sender As Object, e As EventArgs) Handles btnStop_play.Click
    If Me.btnStop_play.Text = "إيقاف تشغيل السلام الوطني" Then
        Me.WMPlayer.close()
        Me.btnStop_play.Text = "تشغيل السلام الوطني"
    Else
        Me.WMPlayer.URL = anthemMp3
        Me.btnStop_play.Text = "إيقاف تشغيل السلام الوطني"
    End If
End Sub
```

The code is used for:

No	Statement	(✓)	(✗)
1-	To play the National Anthem sound file		
2-	To stop playing the National Anthem sound file		
3-	To stop/play the National Anthem sound file		

Topic twelve

Adding the video file of tourist attractions to (Electronic Arabic Atlas) program

Learning outcomes:

At the end of the Topic students can:

1. **Write the program code to play or stop a video file.**
2. **Specify the path where video files are saved.**
3. **Show the video file types inside the folder.**

Adjust video file names of countries' tourist attractions; with the same names shown in the list of countries names.

- Some video file names of countries' tourist attractions saved in the "*Video*" folder

  مصر.mp3

  تونس.mp3

  السعودية.mp3

- Add a command button to the interface of the program So that the value of the property *Name* is "*btnPlayVideos* "and the value of the property *Text* is *"tourist attractions"*.

- Type the following code in the " *btnPlayVideos_Click* " event handler for " *btnPlayVideos* " button to run tourist attractions video file for the countries as shown in the following code:

```
Private Sub btnPlayVideos_Click(sender As Object, e As EventArgs) Handles btnPlayVideos.Click
    If Me.btnPlayVideos.Text = "معالم سياحية" Then
        Me.WMPlayer.Visible = True
        Me.WMPlayer.URL = "c:\Atlas\videos\" & Me.cmbbxState.SelectedValue.ToString & ".wmv"
        Me.btnPlayVideos.Text = "إيقاف العرض"
    Else
        Me.WMPlayer.Visible = False
        Me.WMPlayer.close()
        Me.btnPlayVideos.Text = "معالم سياحية"
    End If
End Sub
```

Remember dear student

1. Make sure of naming the video files of *tourist attractions* for each country.
2. Show the video files of *tourist attractions*.
3. Recognize the path where video files are saved.

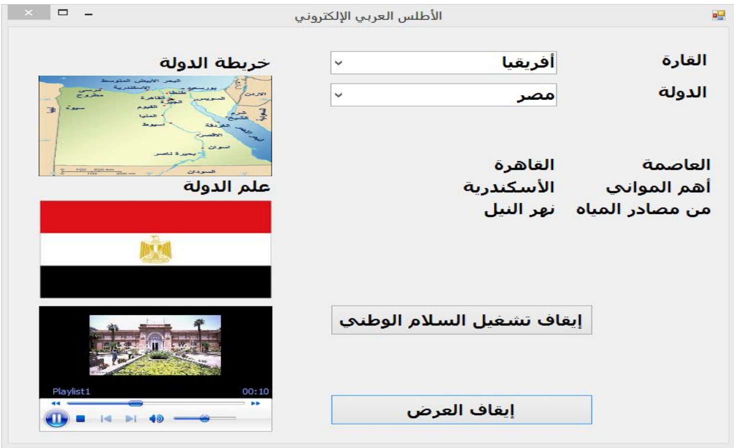
Notice

1. The property *SelectedValue* of the control "*cmbbxState*" was used to get the name of the country; to identify the video file name and path.

2. The control *WMPlayer* was displayed by setting the property *Visible* to the value *True*; so you can see the video file displayed on the screen.

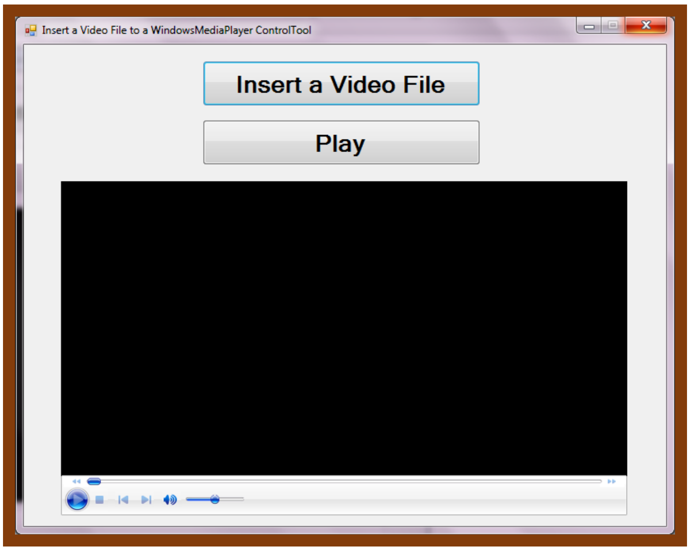
3. You can turn off or play the video file through *btnPlayVideos* button as shown in the previous code.

The user interface window will appear after the execution as follows:



Exercises

1- Set up a project with name (VB_Multimedia_ Vedio1K) so that you can insert a video file to the tool (AxWindowsMediaPlayer), and play it using an input box (InputBox) on the form as follows:



Program code

```
' ---------------------------- Insert a Video File to a WindowsMediaPlayer ControlTool ----------------------------
Public Class Form1
    Dim V As String

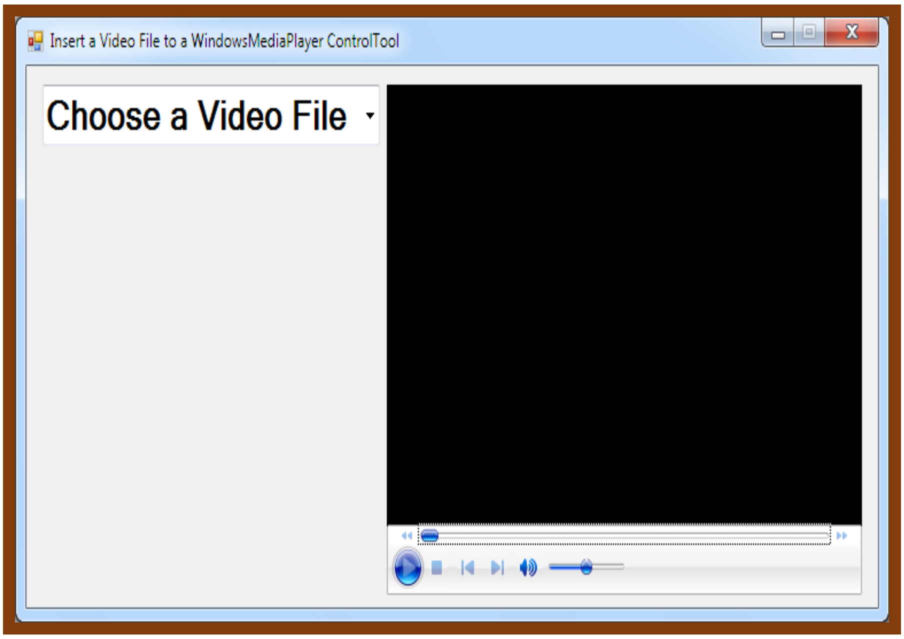
    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
        V = InputBox("Enter a Video Filename:")
        Button2.Text = "Play"
        AxWindowsMediaPlayer1.close()
    End Sub

    Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button2.Click
        If Button2.Text = "Play" And V <> "" Then
            AxWindowsMediaPlayer1.URL = V
            Button2.Text = "Stop"
        Else
            AxWindowsMediaPlayer1.close()
            Button2.Text = "Play"
        End If
    End Sub
End Class
```

Notice

Insert a sound file into the (AxWindowsMediaPlayer) tool by typing the desired file name in the input box (InputBox) that will be executed later.

2- Set up a project with name (VB_Multimedia_Vedio2K) to insert a video file into the control (AxWindowsMediaPlayer) using the control (ComboBox), on the form as follows:



Program code

```
' Insert a Video File to a WindowsMediaPlayer ControlTool
Public Class Form1
   Private Sub ComboBox1_SelectedIndexChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
ComboBox1.SelectedIndexChanged
       Dim V As String
       V = ComboBox1.SelectedItem
       AxWindowsMediaPlayer1.URL = V
End Sub
End Class
```

Notice

The control *ComboBox* is used to display video files'names saved on the storage medium to be executed later

Questions relating to Project's codes

First question

State whether the following statements are true (√) or false (X)

#	The statement	(✓)	(✗)
(1)	**You can use Try/Catch to discover errors while running the program and display an appropriate message for this error**	O	O
(2)	**The code Me.lblDC.Text = dt.Rows(0).Item(2).ToString customize a value to the element in the second row and first column of the data table lblDC.**	O	O
(3)	**The event SelectedIndexChanged of the control ComboBox is executed when changing the current item in the existing list.**	O	O
(4)	**The (&) operator is used to concatenate between string variables and text; the result is a single string.**	O	O
(5)	**The code Me.lblDC.Text = dt.Rows(0).Item(2).ToString customize a value to the element in the first row and third column in the spreadsheet and places it within the lblDC.**	O	O
(6)	**To the URL property in the code Me.WMPlayer.URL = "anthem.mp3" is used to stop or play the sound file "anthem.mp3".**		
(7)	**The function FromFile is used to assign a picture from a file.**		
(8)	**The property DisplayMember of the control ComboBox can be used to specify a field from the data source that appears inside this control.**		
(9)	**The property ValueMember of the control ComboBox can be used to specify a field from the data source as the value of each element of the list items.**		

Second question

You have a data table named "Marks" of a group of students, their grades and the total of these grades as follows

Name	Arabic	English	French	Total
Youssef Khaled	50	49	48	147
Mohamed Khaled	43	45	47	135
Samy Ahmed	22	24	30	76
Mohamed Aly	48	35	44	127
Soad Hafez	25	29	30	84
Mona Zaki	19	10	17	46
Nahed Nasr	26	35	42	103
Wael Salah	50	46	41	137
Hamada Farid	37	29	33	99
Walid Abdou	30	35	34	99

Choose the right syntax for the Select statement to get the following:

1. **All the records in a data table……………………………….**
   - Select Sum (*) from Marks
   - Select Count (*) from Marks
   - Select Total from Marks
2. **The number of records in a data table……………………………….**
   - Select Sum (*) from Marks
   - Select Count (*) from Marks
   - Select Total from Marks
3. **The names of students only……………………………….**
   - Select * from [Marks] Where Total=99
   - Select Total=99 from [Marks]
   - Select Total Where Marks=99
4. **The names of the students and their grades.................................**
   - Select * from [Marks] Where Total=99
   - Select Total=99 from [Marks]
   - Select Total Where Marks=99

5. **All records on condition that their total equals 99..................................**

- Select * from [Marks] Where Total=99
- Select Total=99 from [Marks]
- Select Total Where Marks=99

6. **The Names and total of grades provided that their total equals 99..................................**

- Select Name , French from [Marks] Where French >=44
- Select Name, French Where French >=44
- Select Name , French >=44 from [Marks]

7. **The Names and total of grades provided that their total is less than 75..................................**

- Select Name , French from [Marks] Where French >=44
- Select Name, French Where French >=44
- Select Name , French >=44 from [Marks]

8. **Student's names and their grades in "French" language provided that the grade is greater than or equal 44.................................**

- Select Name , French from [Marks] Where French >=44
- Select Name, French Where French >=44
- Select Name , French >=44 from [Marks]

9. **All students having grade=50 in the "Arabic" language.................................**

- Select Count (Name) from Marks Where Total >=75
- Select Count (Total >=75) from Marks
- Select Name , Count (Total >=75) from Marks

10.All students names that begin with the letters ' M' ....

- Select Count (Name) from Marks Where Total >=75
- Select Count (Total >=75) from Marks
- Select Name , Count (Total >=75) from Marks

11.The number of students with a passing grade of 75 ....

- Select Count (Name) from Marks Where Total >=75
- Select Count (Total >=75) from Marks
- Select Name , Count (Total >=75) from Marks

12.All students names ending with the letters ' ed '..................................

- Select Name from Marks Where Name Like 'ed%'
- Select Name from Marks Where Name Like '%ed'
- Select Name ('_ed') from Marks